SEQUENCE LISTING

<110>   Neose Technologies, Inc.
         DeFrees, Shawn
         Zopf, David
         Bayer, Robert
         Hakes, David
         Chen, Xi
         Bowe, Caryne

<120>   GLYCOPEGYLATION METHODS AND PROTEINS/PEPTIDES PRODUCED BY THE
         METHODS

<130>   040853-5051-US01

<140>   US 10/552,896
<141>   2005-10-11

<150>   US 10/411,012
<151>   2003-04-09

<150>   US 10/411,026
<151>   2003-04-09

<150>   US 10/410,962
<151>   2003-04-09

<150>   US 10/411,049
<151>   2003-04-09

<150>   US 10/410,930
<151>   2003-04-09

<150>   US 10/410,897
<151>   2003-04-09

<150>   US 10/410,997
<151>   2003-04-09

<150>   US 10/411,044
<151>   2003-04-09

<150>   US 10/410,980
<151>   2003-04-09

<150>   US 10/410,945
<151>   2003-04-09

<150>   US 10/410,913
<151>   2003-04-09

<150>   US 10/411,037
<151>   2003-04-09

<150>   US 10/411,043
<151>   2003-04-09

<150>   PCT US2004/011494
<151>   2004-04-09

<160>   75

<170>   PatentIn version 3.2

<210>   1
<211>   525

<212> DNA
<213> Homo sapiens

<400> 1
acccccctgg gccctgccag ctccctgccc cagagcttcc tgctcaagtg cttagagcaa   60

gtgaggaaga tccagggcga tggcgcagcg ctccaggaga agctgtgtgc cacctacaag   120

ctgtgccacc ccgaggagct ggtgctgctc ggacactctc tgggcatccc ctgggctccc   180

ctgagcagct gccccagcca ggccctgcag ctggcaggct gcttgagcca actccatagc   240

ggcctttttcc tctaccaggg gctcctgcag gccctggaag ggatctcccc cgagttgggt   300

cccaccttgg acacactgca gctggacgtc gccgactttg ccaccaccat ctggcagcag   360

atggaagaac tgggaatggc ccctgccctg cagcccaccc agggtgccat gccggccttc   420

gcctctgctt tccagcgccg ggcaggaggg gtcctggttg cctcccatct gcagagcttc   480

ctggaggtgt cgtaccgcgt tctacgccac cttgcccagc cctga   525

<210> 2
<211> 174
<212> PRT
<213> Homo sapiens

<400> 2
Thr Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys
1   5   10   15

Cys Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln
            20   25   30

Glu Lys Leu Cys Ala Thr Tyr Lys Leu Cys His Pro Glu Glu Leu Val
        35   40   45

Leu Leu Gly His Ser Leu Gly Ile Pro Trp Ala Pro Leu Ser Ser Cys
    50   55   60

Pro Ser Gln Ala Leu Gln Leu Ala Gly Cys Leu Ser Gln Leu His Ser
65   70   75   80

Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Glu Gly Ile Ser
                85   90   95

Pro Glu Leu Gly Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Ala Asp
            100   105   110

Phe Ala Thr Thr Ile Trp Gln Gln Met Glu Glu Leu Gly Met Ala Pro
        115   120   125

Ala Leu Gln Pro Thr Gln Gly Ala Met Pro Ala Phe Ala Ser Ala Phe
    130   135   140

Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser His Leu Gln Ser Phe
145   150   155   160

Leu Glu Val Ser Tyr Arg Val Leu Arg His Leu Ala Gln Pro
                165   170

<210> 3
<211> 1733
<212> DNA
<213> Homo sapiens

<400>   3
gcgcctctta tgtacccaca aaaatctatt ttcaaaaaag ttgctctaag aatatagtta   60

tcaagttaag taaaatgtca atagcctttt aatttaattt ttaattgttt tatcattctt   120

tgcaataata aaacattaac tttatacttt ttaatttaat gtatagaata gagatataca   180

taggatatgt aaatagatac acagtgtata tgtgattaaa atataatggg agattcaatc   240

agaaaaaagt ttctaaaaag gctctggggt aaaagaggaa ggaaacaata atgaaaaaaa   300

tgtggtgaga aaaacagctg aaaacccatg taaagagtgt ataagaaag caaaaagaga   360

agtagaaagt aacacagggg catttggaaa atgtaaacga gtatgttccc tatttaaggc   420

taggcacaaa gcaaggtctt cagagaacct ggagcctaag gtttaggctc acccatttca   480

accagtctag cagcatctgc aacatctaca atggccttga cctttgcttt actggtggcc   540

ctcctggtgc tcagctgcaa gtcaagctgc tctgtgggct gtgatctgcc tcaaacccac   600

agcctgggta gcaggaggac cttgatgctc ctggcacaga tgaggagaat ctctcttttc   660

tcctgcttga aggacagaca tgactttgga tttccccagg aggagtttgg caaccagttc   720

caaaaggctg aaaccatccc tgtcctccat gagatgatcc agcagatctt caatctcttc   780

agcacaaagg actcatctgc tgcttgggat gagaccctcc tagacaaatt ctacactgaa   840

ctctaccagc agctgaatga cctggaagcc tgtgtgatac aggggggtggg ggtgacagag   900

actcccctga tgaaggagga ctccattctg gctgtgagga atacttcca aagaatcact   960

ctctatctga aagagaagaa atacagccct tgtgcctggg aggttgtcag agcagaaatc   1020

atgagatctt tttctttgtc aacaaacttg caagaaagtt taagaagtaa ggaatgaaaa   1080

ctggttcaac atggaaatga ttttcattga ttcgtatgcc agctcacctt tttatgatct   1140

gccatttcaa agactcatgt ttctgctatg accatgacac gatttaaatc ttttcaaatg   1200

tttttaggag tattaatcaa cattgtattc agctcttaag gcactagtcc cttacagagg   1260

accatgctga ctgatccatt atctatttaa atatttttaa aatattattt atttaactat   1320

ttataaaaca acttattttt gttcatatta tgtcatgtgc acctttgcac agtggttaat   1380

gtaataaaat gtgttctttg tatttggtaa atttattttg tgttgttcat tgaactttg   1440

ctatggaact tttgtacttg tttattcttt aaaatgaaat tccaagccta attgtgcaac   1500

ctgattacag ataactggt acacttcatt tgtccatcaa tattatattc aagatataag   1560

taaaaataaa ctttctgtaa accaagttgt atgttgtact caagataaca gggtgaacct   1620

aacaaataca attctgctct cttgtgtatt tgattttttgt atgaaaaaaa ctaaaaatgg   1680

taatcatact taattatcag ttatggtaaa tggtatgaag agaagaagga acg   1733

<210>   4
<211>   188
<212>   PRT
<213>   Homo sapiens

<400>   4
Met Ala Leu Thr Phe Ala Leu Leu Val Ala Leu Leu Val Leu Ser Cys

```
1                    5                        10                            15
Lys Ser Ser Cys Ser Val Gly Cys Asp Leu Pro Gln Thr His Ser Leu
            20              25              30
Gly Ser Arg Arg Thr Leu Met Leu Leu Ala Gln Met Arg Arg Ile Ser
        35              40              45
Leu Phe Ser Cys Leu Lys Asp Arg His Asp Phe Gly Phe Pro Gln Glu
    50              55              60
Glu Phe Gly Asn Gln Phe Gln Lys Ala Glu Thr Ile Pro Val Leu His
65              70              75              80
Glu Met Ile Gln Gln Ile Phe Asn Leu Phe Ser Thr Lys Asp Ser Ser
            85              90              95
Ala Ala Trp Asp Glu Thr Leu Leu Asp Lys Phe Tyr Thr Glu Leu Tyr
        100             105             110
Gln Gln Leu Asn Asp Leu Glu Ala Cys Val Ile Gln Gly Val Gly Val
        115             120             125
Thr Glu Thr Pro Leu Met Lys Glu Asp Ser Ile Leu Ala Val Arg Lys
    130             135             140
Tyr Phe Gln Arg Ile Thr Leu Tyr Leu Lys Glu Lys Lys Tyr Ser Pro
145             150             155             160
Cys Ala Trp Glu Val Val Arg Ala Glu Ile Met Arg Ser Phe Ser Leu
            165             170             175
Ser Thr Asn Leu Gln Glu Ser Leu Arg Ser Lys Glu
            180             185
```

<210>   5
<211>   757
<212>   DNA
<213>   Homo sapiens

<400>   5

```
atgaccaaca agtgtctcct ccaaattgct ctcctgttgt gcttctccac tacagctctt     60

tccatgagct acaacttgct tggattccta caaagaagca gcaattttca gtgtcagaag    120

ctcctgtggc aattgaatgg gaggcttgaa tattgcctca aggacaggat gaactttgac    180

atccctgagg agattaagca gctgcagcag ttccagaagg aggacgccgc attgaccatc    240

tatgagatgc tccagaacat ctttgctatt ttcagacaag attcatctag cactggctgg    300

aatgagacta ttgttgagaa cctcctggct aatgtctatc atcagataaa ccatctgaag    360

acagtcctgg aagaaaaact ggagaaagaa gattttacca ggggaaaact catgagcagt    420

ctgcacctga aaagatatta tgggaggatt ctgcattacc tgaaggccaa ggagtacagt    480

cactgtgcct ggaccatagt cagagtggaa atcctaagga acttttactt cattaacaga    540

cttacaggtt acctccgaaa ctgaagatct cctagcctgt ccctctggga ctggacaatt    600

gcttcaagca ttcttcaacc agcagatgct gtttaagtga ctgatggcta atgtactgca    660

aatgaaagga cactagaaga ttttgaaatt tttattaaat tatgagttat ttttatttat    720

ttaaatttta ttttggaaaa taaattattt ttggtgc                            757
```

```
<210>   6
<211>   187
<212>   PRT
<213>   Homo sapiens

<400>   6
Met Thr Asn Lys Cys Leu Leu Gln Ile Ala Leu Leu Leu Cys Phe Ser
1               5                   10                  15

Thr Thr Ala Leu Ser Met Ser Tyr Asn Leu Leu Gly Phe Leu Gln Arg
            20                  25                  30

Ser Ser Asn Phe Gln Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg
        35                  40                  45

Leu Glu Tyr Cys Leu Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu
    50                  55                  60

Ile Lys Gln Leu Gln Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile
65                  70                  75                  80

Tyr Glu Met Leu Gln Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser
                85                  90                  95

Ser Thr Gly Trp Asn Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val
            100                 105                 110

Tyr His Gln Ile Asn His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu
        115                 120                 125

Lys Glu Asp Phe Thr Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys
    130                 135                 140

Arg Tyr Tyr Gly Arg Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser
145                 150                 155                 160

His Cys Ala Trp Thr Ile Val Arg Val Glu Ile Leu Arg Asn Phe Tyr
            165                 170                 175

Phe Ile Asn Arg Leu Thr Gly Tyr Leu Arg Asn
            180                 185

<210>   7
<211>   1332
<212>   DNA
<213>   Homo sapiens

<400>   7
atggtctccc aggccctcag gctcctctgc cttctgcttg ggcttcaggg ctgcctggct      60

gcagtcttcg taacccagga ggaagcccac ggcgtcctgc accggcgccg cgcgccaac       120

gcgttcctgg aggagctgcg gccgggctcc ctggagaggg agtgcaagga ggagcagtgc      180

tccttcgagg aggcccggga gatcttcaag gacgcggaga ggacgaagct gttctggatt      240

tcttacagtg atggggacca gtgtgcctca gtccatgcc agaatggggg ctcctgcaag       300

gaccagctcc agtcctatat ctgcttctgc ctccctgcct tcgagggccg gaactgtgag      360

acgcacaagg atgaccagct gatctgtgtg aacgagaacg cggctgtga gcagtactgc       420

agtgaccaca cgggcaccaa gcgctcctgt cggtgccacg aggggtactc tctgctggca      480

gacggggtgt cctgcacacc cacagttgaa tatccatgtg aaaaatacc tattctagaa       540
```

```
aaaagaaatg ccagcaaacc ccaaggccga attgtggggg gcaaggtgtg ccccaaaggg      600

gagtgtccat ggcaggtcct gttgttggtg aatggagctc agttgtgtgg ggggaccctg      660

atcaacacca tctgggtggt ctccgcggcc cactgtttcg acaaaatcaa gaactggagg      720

aacctgatcg cggtgctggg cgagcacgac ctcagcgagc acgacgggga tgagcagagc      780

cggcgggtgg cgcaggtcat catccccagc acgtacgtcc cgggcaccac caaccacgac      840

atcgcgctgc tccgcctgca ccagcccgtg gtcctcactg accatgtggt gcccctctgc      900

ctgcccgaac ggacgttctc tgagaggacg ctggccttcg tgcgcttctc attggtcagc      960

ggctggggcc agctgctgga ccgtggcgcc acggccctgg agctcatggt gctcaacgtg     1020

cccccggctga tgacccagga ctgcctgcag cagtcacgga aggtgggaga ctccccaaat     1080

atcacggagt acatgttctg tgccggctac tcggatggca gcaaggactc ctgcaagggg     1140

gacagtggag gcccacatgc cacccactac cggggcacgt ggtacctgac gggcatcgtc     1200

agctggggcc agggctgcgc aaccgtgggc cactttgggg tgtacaccag ggtctcccag     1260

tacatcgagt ggctgcaaaa gctcatgcgc tcagagccac gcccaggagt cctcctgcga     1320

gccccatttc cc                                                        1332
```

<210>   8
<211>   444
<212>   PRT
<213>   Homo sapiens

<400>   8
```
Met Val Ser Gln Ala Leu Arg Leu Leu Cys Leu Leu Leu Gly Leu Gln
1               5                   10                  15
Gly Cys Leu Ala Ala Val Phe Val Thr Gln Glu Glu Ala His Gly Val
                20                  25                  30

Leu His Arg Arg Arg Arg Ala Asn Ala Phe Leu Glu Glu Leu Arg Pro
        35                  40                  45

Gly Ser Leu Glu Arg Glu Cys Lys Glu Glu Gln Cys Ser Phe Glu Glu
    50                  55                  60

Ala Arg Glu Ile Phe Lys Asp Ala Glu Arg Thr Lys Leu Phe Trp Ile
65                  70                  75                  80

Ser Tyr Ser Asp Gly Asp Gln Cys Ala Ser Ser Pro Cys Gln Asn Gly
                85                  90                  95

Gly Ser Cys Lys Asp Gln Leu Gln Ser Tyr Ile Cys Phe Cys Leu Pro
                100                 105                 110

Ala Phe Glu Gly Arg Asn Cys Glu Thr His Lys Asp Asp Gln Leu Ile
        115                 120                 125

Cys Val Asn Glu Asn Gly Gly Cys Glu Gln Tyr Cys Ser Asp His Thr
    130                 135                 140

Gly Thr Lys Arg Ser Cys Arg Cys His Glu Gly Tyr Ser Leu Leu Ala
145                 150                 155                 160

Asp Gly Val Ser Cys Thr Pro Thr Val Glu Tyr Pro Cys Gly Lys Ile
                165                 170                 175
```

```
Pro Ile Leu Glu Lys Arg Asn Ala Ser Lys Pro Gln Gly Arg Ile Val
             180                 185                 190

Gly Gly Lys Val Cys Pro Lys Gly Glu Cys Pro Trp Gln Val Leu Leu
             195                 200       ·           205

Leu Val Asn Gly Ala Gln Leu Cys Gly Gly Thr Leu Ile Asn Thr Ile
    210                 215                 220                 .

Trp Val Val Ser Ala Ala His Cys Phe Asp Lys Ile Lys Asn Trp Arg
225                 230                 235                 240

Asn Leu Ile Ala Val Leu Gly Glu His Asp Leu Ser Glu His Asp Gly
                245                 250                 255

Asp Glu Gln Ser Arg Arg Val Ala Gln Val Ile Ile Pro Ser Thr Tyr
             260                 265                 270

Val Pro Gly Thr Thr Asn His Asp Ile Ala Leu Leu Arg Leu His Gln
    275                 280                 285

Pro Val Val Leu Thr Asp His Val Val Pro Leu Cys Leu Pro Glu Arg
    290                 295                 300

Thr Phe Ser Glu Arg Thr Leu Ala Phe Val Arg Phe Ser Leu Val Ser
305                 310                 315                 320

Gly Trp Gly Gln Leu Leu Asp Arg Gly Ala Thr Ala Leu Glu Leu Met
             325                 330                 335

Val Leu Asn Val Pro Arg Leu Met Thr Gln Asp Cys Leu Gln Gln Ser
             340                 345                 350

Arg Lys Val Gly Asp Ser Pro Asn Ile Thr Glu Tyr Met Phe Cys Ala
             355                 360                 365

Gly Tyr Ser Asp Gly Ser Lys Asp Ser Cys Lys Gly Asp Ser Gly Gly
    370                 375                 380

Pro His Ala Thr His Tyr Arg Gly Thr Trp Tyr Leu Thr Gly Ile Val
385                 390                 395                 400

Ser Trp Gly Gln Gly Cys Ala Thr Val Gly His Phe Gly Val Tyr Thr
             405                 410                 415

Arg Val Ser Gln Tyr Ile Glu Trp Leu Gln Lys Leu Met Arg Ser Glu
             420                 425                 430

Pro Arg Pro Gly Val Leu Leu Arg Ala Pro Phe Pro
    435                 440
```

<210> 9
<211> 1437
<212> DNA
<213> Homo sapiens

<400> 9
atgcagcgcg tgaacatgat catggcagaa tcaccaagcc tcatcaccat ctgccttttta   60

ggatatctac tcagtgctga atgtacagtt tttcttgatc atgaaaacgc caacaaaatt   120

ctgaatcggc caaagaggta taattcaggt aaattggaag agtttgttca agggaacctt   180

gagagagaat gtatggaaga aaagtgtagt tttgaagaac cacgagaagt ttttgaaaac   240

```
actgaaaaga caactgaatt ttggaagcag tatgttgatg gagatcagtg tgagtccaat    300

ccatgtttaa atggcggcag ttgcaaggat gacattaatt cctatgaatg ttggtgtccc    360

tttggatttg aaggaaagaa ctgtgaatta gatgtaacat gtaacattaa gaatggcaga    420

tgcgagcagt tttgtaaaaa tagtgctgat aacaaggtgg tttgctcctg tactgaggga    480

tatcgacttg cagaaaacca gaagtcctgt gaaccagcag tgccatttcc atgtggaaga    540

gtttctgttt cacaaacttc taagctcacc cgtgctgagg ctgtttttcc tgatgtggac    600

tatgtaaatc ctactgaagc tgaaaccatt ttggataaca tcactcaagg cacccaatca    660

tttaatgact tcactcgggt tgttggtgga gaagatgcca aaccaggtca attcccttgg    720

caggttgttt tgaatggtaa agttgatgca ttctgtggag ctctatcgt taatgaaaaa    780

tggattgtaa ctgctgccca ctgtgttgaa actggtgtta aaattacagt tgtcgcaggt    840

gaacataata ttgaggagac agaacataca gagcaaaagc gaaatgtgat tcgagcaatt    900

attcctcacc acaactacaa tgcagctatt aataagtaca accatgacat tgcccttctg    960

gaactggacg aacccttagt gctaaacagc tacgttacac ctatttgcat tgctgacaag   1020

gaatacacga acatcttcct caaatttgga tctggctatg taagtggctg ggcaagagtc   1080

ttccacaaag ggagatcagc tttagttctt cagtacctta gagttccact tgttgaccga   1140

gccacatgtc ttcgatctac aaagttcacc atctataaca acatgttctg tgctggcttc   1200

catgaaggag gtagagattc atgtcaagga gatagtgggg gaccccatgt tactgaagtg   1260

gaagggacca gtttcttaac tggaattatt agctggggtg aagagtgtgc aatgaaaggc   1320

aaatatggaa tatataccaa ggtatcccgg tatgtcaact ggattaagga aaaaacaaag   1380

ctcacttaat gaaagatgga tttccaaggt taattcattg gaattgaaaa ttaacag      1437
```

```
<210>   10
<211>   462
<212>   PRT
<213>   Homo sapiens

<400>   10
Met Gln Arg Val Asn Met Ile Met Ala Glu Ser Pro Ser Leu Ile Thr
1               5                   10                  15

Ile Cys Leu Leu Gly Tyr Leu Leu Ser Ala Glu Cys Thr Val Phe Leu
                20                  25                  30

Asp His Glu Asn Ala Asn Lys Ile Leu Asn Arg Pro Lys Arg Tyr Asn
            35                  40                  45

Ser Gly Lys Leu Glu Glu Phe Val Gln Gly Asn Leu Glu Arg Glu Cys
        50                  55                  60

Met Glu Glu Lys Cys Ser Phe Glu Glu Pro Arg Glu Val Phe Glu Asn
65                  70                  75                  80

Thr Glu Lys Thr Thr Glu Phe Trp Lys Gln Tyr Val Asp Gly Asp Gln
                85                  90                  95

Cys Glu Ser Asn Pro Cys Leu Asn Gly Gly Ser Cys Lys Asp Asp Ile
                100                 105                 110
```

```
Asn Ser Tyr Glu Cys Trp Cys Pro Phe Gly Phe Glu Gly Lys Asn Cys
        115                 120                 125

Glu Leu Asp Val Thr Cys Asn Ile Lys Asn Gly Arg Cys Glu Gln Phe
    130                 135                 140

Cys Lys Asn Ser Ala Asp Asn Lys Val Val Cys Ser Cys Thr Glu Gly
145                 150                 155                 160

Tyr Arg Leu Ala Glu Asn Gln Lys Ser Cys Glu Pro Ala Val Pro Phe
            165                 170                 175

Pro Cys Gly Arg Val Ser Val Ser Gln Thr Ser Lys Leu Thr Arg Ala
            180                 185                 190

Glu Ala Val Phe Pro Asp Val Asp Tyr Val Asn Pro Thr Glu Ala Glu
        195                 200                 205

Thr Ile Leu Asp Asn Ile Thr Gln Gly Thr Gln Ser Phe Asn Asp Phe
    210                 215                 220

Thr Arg Val Val Gly Gly Glu Asp Ala Lys Pro Gly Gln Phe Pro Trp
225                 230                 235                 240

Gln Val Val Leu Asn Gly Lys Val Asp Ala Phe Cys Gly Gly Ser Ile
            245                 250                 255

Val Asn Glu Lys Trp Ile Val Thr Ala Ala His Cys Val Glu Thr Gly
            260                 265                 270

Val Lys Ile Thr Val Val Ala Gly Glu His Asn Ile Glu Glu Thr Glu
        275                 280                 285

His Thr Glu Gln Lys Arg Asn Val Ile Arg Ala Ile Ile Pro His His
    290                 295                 300

Asn Tyr Asn Ala Ala Ile Asn Lys Tyr Asn His Asp Ile Ala Leu Leu
305                 310                 315                 320

Glu Leu Asp Glu Pro Leu Val Leu Asn Ser Tyr Val Thr Pro Ile Cys
            325                 330                 335

Ile Ala Asp Lys Glu Tyr Thr Asn Ile Phe Leu Lys Phe Gly Ser Gly
            340                 345                 350

Tyr Val Ser Gly Trp Ala Arg Val Phe His Lys Gly Arg Ser Ala Leu
        355                 360                 365

Val Leu Gln Tyr Leu Arg Val Pro Leu Val Asp Arg Ala Thr Cys Leu
    370                 375                 380

Arg Ser Thr Lys Phe Thr Ile Tyr Asn Asn Met Phe Cys Ala Gly Phe
385                 390                 395                 400

His Glu Gly Gly Arg Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro His
            405                 410                 415

Val Thr Glu Val Glu Gly Thr Ser Phe Leu Thr Gly Ile Ile Ser Trp
        420                 425                 430

Gly Glu Glu Cys Ala Met Lys Gly Lys Tyr Gly Ile Tyr Thr Lys Val
        435                 440                 445

Ser Arg Tyr Val Asn Trp Ile Lys Glu Lys Thr Lys Leu Thr
450                 455                 460
```

<210> 11
<211> 603
<212> DNA
<213> Homo sapiens

<400> 11
atggattact acagaaaata tgcagctatc tttctggtca cattgtcggt gtttctgcat   60

gttctccatt ccgctcctga tgtgcaggat tgcccagaat gcacgctaca ggaaaaccca   120

ttcttctccc agccgggtgc cccaatactt cagtgcatgg gctgctgctt ctctagagca   180

tatcccactc cactaaggtc caagaagacg atgttggtcc aaaagaacgt cacctcagag   240

tccacttgct gtgtagctaa atcatataac agggtcacag taatgggggg tttcaaagtg   300

gagaaccaca cggcgtgcca ctgcagtact tgttattatc acaaatctta aatgttttac   360

caagtgctgt cttgatgact gctgattttc tggaatggaa aattaagttg tttagtgttt   420

atggctttgt gagataaaac tctccttttc cttaccatac cactttgaca cgcttcaagg   480

atatactgca gctttactgc cttcctcctt atcctacagt acaatcagca gtctagttct   540

tttcatttgg aatgaataca gcattaagct tgttccactg caaataaagc cttttaaatc   600

atc   603

<210> 12
<211> 116
<212> PRT
<213> Homo sapiens

<400> 12
Met Asp Tyr Tyr Arg Lys Tyr Ala Ala Ile Phe Leu Val Thr Leu Ser
1   5   10   15

Val Phe Leu His Val Leu His Ser Ala Pro Asp Val Gln Asp Cys Pro
            20   25   30

Glu Cys Thr Leu Gln Glu Asn Pro Phe Phe Ser Gln Pro Gly Ala Pro
        35   40   45

Ile Leu Gln Cys Met Gly Cys Cys Phe Ser Arg Ala Tyr Pro Thr Pro
    50   55   60

Leu Arg Ser Lys Lys Thr Met Leu Val Gln Lys Asn Val Thr Ser Glu
65   70   75   80

Ser Thr Cys Cys Val Ala Lys Ser Tyr Asn Arg Val Thr Val Met Gly
                85   90   95

Gly Phe Lys Val Glu Asn His Thr Ala Cys His Cys Ser Thr Cys Tyr
            100   105   110

Tyr His Lys Ser
            115

<210> 13
<211> 390
<212> DNA
<213> Homo sapiens

<400> 13
atgaagacac tccagttttt cttccttttc tgttgctgga aagcaatctg ctgcaatagc   60

```
tgtgagctga ccaacatcac cattgcaata gagaaagaag aatgtcgttt ctgcataagc      120

atcaacacca cttggtgtgc tggctactgc tacaccaggg atctggtgta taaggaccca      180

gccaggccca aaatccagaa aacatgtacc ttcaaggaac tggtatatga aacagtgaga      240

gtgcccggct gtgctcacca tgcagattcc ttgtatacat acccagtggc cacccagtgt      300

cactgtggca agtgtgacag cgacagcact gattgtactg tgcgaggcct ggggcccagc      360

tactgctcct ttggtgaaat gaaagaataa                          .              390
```

<210>   14
<211>   129
<212>   PRT
<213>   Homo sapiens

<400>   14
```
Met Lys Thr Leu Gln Phe Phe Phe Leu Phe Cys Cys Trp Lys Ala Ile
1               5                   10                  15

Cys Cys Asn Ser Cys Glu Leu Thr Asn Ile Thr Ile Ala Ile Glu Lys
            20                  25                  30

Glu Glu Cys Arg Phe Cys Ile Ser Ile Asn Thr Thr Trp Cys Ala Gly
        35                  40                  45

Tyr Cys Tyr Thr Arg Asp Leu Val Tyr Lys Asp Pro Ala Arg Pro Lys
    50                  55                  60

Ile Gln Lys Thr Cys Thr Phe Lys Glu Leu Val Tyr Glu Thr Val Arg
65                  70                  75                  80

Val Pro Gly Cys Ala His His Ala Asp Ser Leu Tyr Thr Tyr Pro Val
            85                  90                  95

Ala Thr Gln Cys His Cys Gly Lys Cys Asp Ser Asp Ser Thr Asp Cys
            100                 105                 110

Thr Val Arg Gly Leu Gly Pro Ser Tyr Cys Ser Phe Gly Glu Met Lys
            115                 120                 125
```

Glu

<210>   15
<211>   1342
<212>   DNA
<213>   Homo sapiens

<400>   15
```
cccggagccg gaccggggcc accgcgcccg ctctgctccg acaccgcgcc ccctggacag       60

ccgccctctc ctccaggccc gtggggctgg ccctgcaccg ccgagcttcc cgggatgagg      120

gcccccggtg tggtcacccg gcgcgcccca ggtcgctgag ggaccccggc caggcgcgga      180

gatggggggtg cacgaatgtc ctgcctggct gtggcttctc ctgtccctgc tgtcgctccc      240

tctgggcctc ccagtcctgg gcgccccacc acgcctcatc tgtgacagcc gagtcctgga      300

gaggtacctc ttggaggcca aggaggccga gaatatcacg acgggctgtg ctgaacactg      360

cagcttgaat gagaatatca ctgtcccaga caccaaagtt aatttctatg cctggaagag      420

gatggaggtc gggcagcagg ccgtagaagt ctggcagggc ctggccctgc tgtcggaagc      480
```

```
tgtcctgcgg ggccaggccc tgttggtcaa ctcttcccag ccgtgggagc ccctgcagct    540

gcatgtggat aaagccgtca gtggccttcg cagcctcacc actctgcttc gggctctgcg    600

agcccagaag gaagccatct cccctccaga tgcggcctca gctgctccac tccgaacaat    660

cactgctgac actttccgca aactcttccg agtctactcc aatttcctcc ggggaaagct    720

gaagctgtac acaggggagg cctgcaggac aggggacaga tgaccaggtg tgtccacctg    780

ggcatatcca ccacctccct caccaacatt gcttgtgcca caccctcccc cgccactcct    840

gaaccccgtc gagggggctct cagctcagcg ccagcctgtc ccatggacac tccagtgcca    900

gcaatgacat ctcaggggcc agaggaactg tccagagagc aactctgaga tctaaggatg    960

tcacagggcc aacttgaggg cccagagcag gaagcattca gagagcagct ttaaactcag   1020

ggacagagcc atgctgggaa gacgcctgag ctcactcggc accctgcaaa atttgatgcc   1080

aggacacgct ttggaggcga tttacctgtt ttcgcaccta ccatcaggga caggatgacc   1140

tggagaactt aggtggcaag ctgtgacttc tccaggtctc acgggcatgg gcactccctt   1200

ggtggcaaga gccccccttga caccgggggtg gtgggaacca tgaagacagg atggggggctg   1260

gcctctggct ctcatggggt ccaagttttg tgtattcttc aacctcattg acaagaactg   1320

aaaccaccaa aaaaaaaaaa aa                                            1342
```

<210>   16
<211>   193
<212>   PRT
<213>   Homo sapiens

<400>   16

```
Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu
1               5                   10                  15


Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu
            20                  25                  30


Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu
        35                  40                  45


Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu
    50                  55                  60


Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg
65                  70                  75                  80


Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu
                85                  90                  95


Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser
            100                 105                 110


Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly
            115                 120                 125


Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Arg Ala Gln Lys Glu
            130                 135                 140


Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile
```

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu
            165   170   175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp
            180   185   190

Arg

<210>   17
<211>   435
<212>   DNA
<213>   Homo sapiens

<400>   17
atgtggctgc agagcctgct gctcttgggc actgtggcct gcagcatctc tgcacccgcc   60

cgctcgccca gccccagcac gcagccctgg gagcatgtga atgccatcca ggaggcccgg   120

cgtctcctga acctgagtag agacactgct gctgagatga atgaaacagt agaagtcatc   180

tcagaaatgt ttgacctcca ggagccgacc tgcctacaga cccgcctgga gctgtacaag   240

cagggcctgc ggggcagcct caccaagctc aagggcccct tgaccatgat ggccagccac   300

tacaagcagc actgccctcc aaccccggaa acttcctgtg caacccagat tatcaccttt   360

gaaagtttca agagaacct gaaggacttt ctgcttgtca tcccctttga ctgctgggag   420

ccagtccagg agtga   435

<210>   18
<211>   144
<212>   PRT
<213>   Homo sapiens

<400>   18
Met Trp Leu Gln Ser Leu Leu Leu Leu Gly Thr Val Ala Cys Ser Ile
1   5   10   15

Ser Ala Pro Ala Arg Ser Pro Ser Pro Ser Thr Gln Pro Trp Glu His
            20   25   30

Val Asn Ala Ile Gln Glu Ala Arg Arg Leu Leu Asn Leu Ser Arg Asp
            35   40   45

Thr Ala Ala Glu Met Asn Glu Thr Val Glu Val Ile Ser Glu Met Phe
    50   55   60

Asp Leu Gln Glu Pro Thr Cys Leu Gln Thr Arg Leu Glu Leu Tyr Lys
65   70   75   80

Gln Gly Leu Arg Gly Ser Leu Thr Lys Leu Lys Gly Pro Leu Thr Met
            85   90   95

Met Ala Ser His Tyr Lys Gln His Cys Pro Pro Thr Pro Glu Thr Ser
            100   105   110

Cys Ala Thr Gln Ile Ile Thr Phe Glu Ser Phe Lys Glu Asn Leu Lys
            115   120   125

Asp Phe Leu Leu Val Ile Pro Phe Asp Cys Trp Glu Pro Val Gln Glu
    130   135   140

<210> 19
<211> 501
<212> DNA
<213> Homo sapiens

<400> 19
atgaaatata caagttatat cttggctttt cagctctgca tcgttttggg ttctcttggc   60

tgttactgcc aggacccata tgtaaaagaa gcagaaaacc ttaagaaata ttttaatgca   120

ggtcattcag atgtagcgga taatggaact cttttcttag cattttgaa gaattggaaa   180

gaggagagtg acagaaaaat aatgcagagc caaattgtct ccttttactt caaacttttt   240

aaaaacttta agatgacca gagcatccaa aagagtgtgg agaccatcaa ggaagacatg   300

aatgtcaagt ttttcaatag caacaaaaag aaacgagatg acttcgaaaa gctgactaat   360

tattcggtaa ctgacttgaa tgtccaacgc aaagcaatac atgaactcat ccaagtgatg   420

gctgaactgt cgccagcagc taaaacaggg aagcgaaaaa ggagtcagat gctgtttcga   480

ggtcgaagag catcccagta a   501

<210> 20
<211> 166
<212> PRT
<213> Homo sapiens

<400> 20
Met Lys Tyr Thr Ser Tyr Ile Leu Ala Phe Gln Leu Cys Ile Val Leu
1   5   10   15

Gly Ser Leu Gly Cys Tyr Cys Gln Asp Pro Tyr Val Lys Glu Ala Glu
                20   25   30

Asn Leu Lys Lys Tyr Phe Asn Ala Gly His Ser Asp Val Ala Asp Asn
            35   40   45

Gly Thr Leu Phe Leu Gly Ile Leu Lys Asn Trp Lys Glu Glu Ser Asp
        50   55   60

Arg Lys Ile Met Gln Ser Gln Ile Val Ser Phe Tyr Phe Lys Leu Phe
65   70   75   80

Lys Asn Phe Lys Asp Asp Gln Ser Ile Gln Lys Ser Val Glu Thr Ile
                85   90   95

Lys Glu Asp Met Asn Val Lys Phe Phe Asn Ser Asn Lys Lys Lys Arg
                100   105   110

Asp Asp Phe Glu Lys Leu Thr Asn Tyr Ser Val Thr Asp Leu Asn Val
            115   120   125

Gln Arg Lys Ala Ile His Glu Leu Ile Gln Val Met Ala Glu Leu Ser
        130   135   140

Pro Ala Ala Lys Thr Gly Lys Arg Lys Arg Ser Gln Met Leu Phe Arg
145   150   155   160

Gly Arg Arg Ala Ser Gln
                165

<210> 21
<211> 1352
<212> DNA

<213> Homo sapiens

<400> 21
```
ctgggacagt gaatcgacaa tgccgtcttc tgtctcgtgg ggcatcctcc tgctggcagg    60

cctgtgctgc ctggtccctg tctccctggc tgaggatccc cagggagatg ctgcccagaa   120

gacagataca tcccaccatg atcaggatca cccaacettc aacaagatca cccccaacct   180

ggctgagttc gccttcagcc tataccgcca gctggcacac cagtccaaca gcaccaatat   240

cttcttctcc ccagtgagca tcgctacagc ctttgcaatg ctctccctgg ggaccaaggc   300

tgacactcac gatgaaatcc tggagggcct gaatttcaac ctcacggaga ttccggaggc   360

tcagatccat gaaggcttcc aggaactcct ccgtaccctc aaccagccag acagccagct   420

ccagctgacc accggcaatg cctgttcct cagcgagggc ctgaagctag tggataagtt   480

tttggaggat gttaaaaagt tgtaccactc agaagccttc actgtcaact cggggacac    540

cgaagaggcc aagaaacaga tcaacgatta cgtggagaag ggtactcaag ggaaaattgt   600

ggatttggtc aaggagcttg acagagacac agtttttgct ctggtgaatt acatcttctt   660

taaaggcaaa tgggagagac cctttgaagt caaggacacc gaggaagagg acttccacgt   720

ggaccaggtg accaccgtga aggtgcctat gatgaagcgt ttaggcatgt ttaacatcca   780

gcactgtaag aagctgtcca gctgggtgct gctgatgaaa tacctgggca atgccaccgc   840

catcttcttc ctgcctgatg aggggaaact acagcacctg gaaaatgaac tcacccacga   900

tatcatcacc aagttcctgg aaaatgaaga cagaaggtct gccagcttac atttacccaa   960

actgtccatt actggaacct atgatctgaa gagcgtcctg ggtcaactgg gcatcactaa  1020

ggtcttcagc aatggggctg acctctccgg ggtcacagag gaggcacccc tgaagctctc  1080

caaggccgtg cataaggctg tgctgaccat cgacgagaaa gggactgaag ctgctggggc  1140

catgtttta gaggccatac ccatgtctat cccccccgag gtcaagttca acaaaccctt  1200

tgtcttctta atgattgaac aaaataccaa gtctcccctc ttcatgggaa aagtggtgaa  1260

tcccacccaa aaataactgc ctctcgctcc tcaacccctc ccctccatcc ctggcccct  1320

ccctggatga cattaaagaa gggttgagct gg                                1352
```

<210> 22
<211> 418
<212> PRT
<213> Homo sapiens

<400> 22
```
Met Pro Ser Ser Val Ser Trp Gly Ile Leu Leu Leu Ala Gly Leu Cys
1               5                   10                  15

Cys Leu Val Pro Val Ser Leu Ala Glu Asp Pro Gln Gly Asp Ala Ala
                20                  25                  30

Gln Lys Thr Asp Thr Ser His His Asp Gln Asp His Pro Thr Phe Asn
        35                  40                  45

Lys Ile Thr Pro Asn Leu Ala Glu Phe Ala Phe Ser Leu Tyr Arg Gln
    50                  55                  60
```

```
Leu Ala His Gln Ser Asn Ser Thr Asn Ile Phe Phe Ser Pro Val Ser
65              70              75              80

Ile Ala Thr Ala Phe Ala Met Leu Ser Leu Gly Thr Lys Ala Asp Thr
                85              90              95

His Asp Glu Ile Leu Glu Gly Leu Asn Phe Asn Leu Thr Glu Ile Pro
            100             105             110

Glu Ala Gln Ile His Glu Gly Phe Gln Glu Leu Leu Arg Thr Leu Asn
        115             120             125

Gln Pro Asp Ser Gln Leu Gln Leu Thr Thr Gly Asn Gly Leu Phe Leu
    130             135             140

Ser Glu Gly Leu Lys Leu Val Asp Lys Phe Leu Glu Asp Val Lys Lys
145             150             155             160

Leu Tyr His Ser Glu Ala Phe Thr Val Asn Phe Gly Asp Thr Glu Glu
            165             170             175

Ala Lys Lys Gln Ile Asn Asp Tyr Val Glu Lys Gly Thr Gln Gly Lys
        180             185             190

Ile Val Asp Leu Val Lys Glu Leu Asp Arg Asp Thr Val Phe Ala Leu
        195             200             205

Val Asn Tyr Ile Phe Phe Lys Gly Lys Trp Glu Arg Pro Phe Glu Val
    210             215             220

Lys Asp Thr Glu Glu Glu Asp Phe His Val Asp Gln Val Thr Thr Val
225             230             235             240

Lys Val Pro Met Met Lys Arg Leu Gly Met Phe Asn Ile Gln His Cys
            245             250             255

Lys Lys Leu Ser Ser Trp Val Leu Leu Met Lys Tyr Leu Gly Asn Ala
            260             265             270

Thr Ala Ile Phe Phe Leu Pro Asp Glu Gly Lys Leu Gln His Leu Glu
        275             280             285

Asn Glu Leu Thr His Asp Ile Ile Thr Lys Phe Leu Glu Asn Glu Asp
    290             295             300

Arg Arg Ser Ala Ser Leu His Leu Pro Lys Leu Ser Ile Thr Gly Thr
305             310             315             320

Tyr Asp Leu Lys Ser Val Leu Gly Gln Leu Gly Ile Thr Lys Val Phe
            325             330             335

Ser Asn Gly Ala Asp Leu Ser Gly Val Thr Glu Glu Ala Pro Leu Lys
            340             345             350

Leu Ser Lys Ala Val His Lys Ala Val Leu Thr Ile Asp Glu Lys Gly
        355             360             365

Thr Glu Ala Ala Gly Ala Met Phe Leu Glu Ala Ile Pro Met Ser Ile
    370             375             380

Pro Pro Glu Val Lys Phe Asn Lys Pro Phe Val Phe Leu Met Ile Glu
385             390             395             400

Gln Asn Thr Lys Ser Pro Leu Phe Met Gly Lys Val Val Asn Pro Thr
            405             410             415
```

Gln Lys

<210>   23
<211>   2004
<212>   DNA
<213>   Homo sapiens

<400>   23
gctaacctag tgcctatagc taaggcaggt acctgcatcc ttgttttgt ttagtggatc   60

ctctatcctt cagagactct ggaacccctg tggtcttctc ttcatctaat gaccctgagg   120

ggatggagtt ttcaagtcct tccagagagg aatgtcccaa gcctttgagt agggtaagca   180

tcatggctgg cagcctcaca ggtttgcttc tacttcaggc agtgtcgtgg gcatcaggtg   240

cccgcccctg catccctaaa agcttcggct acagctcggt ggtgtgtgtc tgcaatgcca   300

catactgtga ctcctttgac cccccgacct ttcctgccct tggtaccttc agccgctatg   360

agagtacacg cagtgggcga cggatggagc tgagtatggg gcccatccag gctaatcaca   420

cgggcacagg cctgctactg accctgcagc cagaacagaa gttccagaaa gtgaagggat   480

ttggagggggc catgacagat gctgctgctc tcaacatcct tgccctgtca ccccctgccc   540

aaaatttgct acttaaatcg tacttctctg aagaaggaat cggatataac atcatccggg   600

tacccatggc cagctgtgac ttctccatcc gcacctacac ctatgcagac acccctgatg   660

atttccagtt gcacaacttc agcctcccag aggaagatac caagctcaag atacccctga   720

ttcaccgagc cctgcagttg gcccagcgtc ccgtttcact ccttgccagc ccctggacat   780

cacccacttg gctcaagacc aatggagcgg tgaatgggaa ggggtcactc aagggacagc   840

ccggagacat ctaccaccag acctgggcca gatactttgt gaagttcctg gatgcctatg   900

ctgagcacaa gttacagttc tgggcagtga cagctgaaaa tgagccttct gctgggctgt   960

tgagtggata cccccttccag tgcctgggct tcacccctga acatcagcga gacttcattg   1020

cccgtgacct aggtcctacc ctcgccaaca gtactcacca caatgtccgc ctactcatgc   1080

tggatgacca acgcttgctg ctgccccact gggcaaaggt ggtactgaca gacccagaag   1140

cagctaaata tgttcatggc attgctgtac attggtacct ggactttctg ctccagcca   1200

aagccaccct aggggagaca caccgcctgt ccccaacac catgctcttt gcctcagagg   1260

cctgtgtggg ctccaagttc tgggagcaga gtgtgcggct aggctcctgg gatcgaggga   1320

tgcagtacag ccacagcatc atcacgaacc tcctgtacca tgtggtcggc tggaccgact   1380

ggaaccttgc cctgaacccc gaaggaggac ccaattgggt gcgtaacttt gtcgacagtc   1440

ccatcattgt agacatcacc aaggacacgt tttacaaaca gcccatgttc taccaccttg   1500

gccacttcag caagttcatt cctgagggct cccagagagt ggggctggtt gccagtcaga   1560

agaacgacct ggacgcagtg gcactgatgc atcccgatgg ctctgctgtt gtggtcgtgc   1620

taaaccgctc ctctaaggat gtgcctctta ccatcaagga tcctgctgtg ggcttcctgg   1680

agacaatctc acctggctac tccattcaca cctacctgtg gcatcgccag tgatggagca   1740

```
gatactcaag gaggcactgg gctcagcctg ggcattaaag ggacagagtc agctcacacg    1800

ctgtctgtga ctaaagaggg cacagcaggg ccagtgtgag cttacagcga cgtaagccca    1860

ggggcaatgg tttgggtgac tcactttccc ctctaggtgg tgcccagggc tggaggcccc    1920

tagaaaaaga tcagtaagcc ccagtgtccc cccagccccc atgcttatgt gaacatgcgc    1980

tgtgtgctgc ttgctttgga aact                                          2004
```

<210> 24
<211> 536
<212> PRT
<213> Homo sapiens

<400> 24

```
Met Glu Phe Ser Ser Pro Ser Arg Glu Glu Cys Pro Lys Pro Leu Ser
1               5                   10                  15

Arg Val Ser Ile Met Ala Gly Ser Leu Thr Gly Leu Leu Leu Leu Gln
            20                  25                  30

Ala Val Ser Trp Ala Ser Gly Ala Arg Pro Cys Ile Pro Lys Ser Phe
        35                  40                  45

Gly Tyr Ser Ser Val Val Cys Val Cys Asn Ala Thr Tyr Cys Asp Ser
    50                  55                  60

Phe Asp Pro Pro Thr Phe Pro Ala Leu Gly Thr Phe Ser Arg Tyr Glu
65                  70                  75                  80

Ser Thr Arg Ser Gly Arg Arg Met Glu Leu Ser Met Gly Pro Ile Gln
                85                  90                  95

Ala Asn His Thr Gly Thr Gly Leu Leu Leu Thr Leu Gln Pro Glu Gln
            100                 105                 110

Lys Phe Gln Lys Val Lys Gly Phe Gly Gly Ala Met Thr Asp Ala Ala
        115                 120                 125

Ala Leu Asn Ile Leu Ala Leu Ser Pro Pro Ala Gln Asn Leu Leu Leu
    130                 135                 140

Lys Ser Tyr Phe Ser Glu Glu Gly Ile Gly Tyr Asn Ile Ile Arg Val
145                 150                 155                 160

Pro Met Ala Ser Cys Asp Phe Ser Ile Arg Thr Tyr Thr Tyr Ala Asp
                165                 170                 175

Thr Pro Asp Asp Phe Gln Leu His Asn Phe Ser Leu Pro Glu Glu Asp
            180                 185                 190

Thr Lys Leu Lys Ile Pro Leu Ile His Arg Ala Leu Gln Leu Ala Gln
        195                 200                 205

Arg Pro Val Ser Leu Leu Ala Ser Pro Trp Thr Ser Pro Thr Trp Leu
    210                 215                 220

Lys Thr Asn Gly Ala Val Asn Gly Lys Gly Ser Leu Lys Gly Gln Pro
225                 230                 235                 240

Gly Asp Ile Tyr His Gln Thr Trp Ala Arg Tyr Phe Val Lys Phe Leu
                245                 250                 255

Asp Ala Tyr Ala Glu His Lys Leu Gln Phe Trp Ala Val Thr Ala Glu
```

```
              260                      265                      270

Asn Glu Pro Ser Ala Gly Leu Leu Ser Gly Tyr Pro Phe Gln Cys Leu
        275                 280                 285

Gly Phe Thr Pro Glu His Gln Arg Asp Phe Ile Ala Arg Asp Leu Gly
        290                 295                 300

Pro Thr Leu Ala Asn Ser Thr His His Asn Val Arg Leu Leu Met Leu
305                 310                 315                 320

Asp Asp Gln Arg Leu Leu Leu Pro His Trp Ala Lys Val Val Leu Thr
                325                 330                 335

Asp Pro Glu Ala Ala Lys Tyr Val His Gly Ile Ala Val His Trp Tyr
                340                 345                 350

Leu Asp Phe Leu Ala Pro Ala Lys Ala Thr Leu Gly Glu Thr His Arg
        355                 360                 365

Leu Phe Pro Asn Thr Met Leu Phe Ala Ser Glu Ala Cys Val Gly Ser
        370                 375                 380

Lys Phe Trp Glu Gln Ser Val Arg Leu Gly Ser Trp Asp Arg Gly Met
385                 390                 395                 400

Gln Tyr Ser His Ser Ile Ile Thr Asn Leu Leu Tyr His Val Val Gly
                405                 410                 415

Trp Thr Asp Trp Asn Leu Ala Leu Asn Pro Glu Gly Gly Pro Asn Trp
                420                 425                 430

Val Arg Asn Phe Val Asp Ser Pro Ile Ile Val Asp Ile Thr Lys Asp
                435                 440                 445

Thr Phe Tyr Lys Gln Pro Met Phe Tyr His Leu Gly His Phe Ser Lys
        450                 455                 460

Phe Ile Pro Glu Gly Ser Gln Arg Val Gly Leu Val Ala Ser Gln Lys
465                 470                 475                 480

Asn Asp Leu Asp Ala Val Ala Leu Met His Pro Asp Gly Ser Ala Val
                485                 490                 495

Val Val Val Leu Asn Arg Ser Ser Lys Asp Val Pro Leu Thr Ile Lys
                500                 505                 510

Asp Pro Ala Val Gly Phe Leu Glu Thr Ile Ser Pro Gly Tyr Ser Ile
        515                 520                 525

His Thr Tyr Leu Trp His Arg Gln
    530                 535
```

<210> 25
<211> 1726
<212> DNA
<213> Homo sapiens

<400> 25

```
atggatgcaa tgaagagagg gctctgctgt gtgctgctgc tgtgtggagc agtcttcgtt      60

tcgcccagcc aggaaatcca tgcccgattc agaagaggag ccagatctta ccaagtgatc     120

tgcagagatg aaaaaacgca gatgatatac cagcaacatc agtcatggct cgcgccctgtg    180

ctcagaagca accgggtgga atattgctgg tgcaacagtg gcagggcaca gtgccactca     240
```

```
gtgcctgtca aaagttgcag cgagccaagg tgtttcaacg ggggcacctg ccagcaggcc      300

ctgtacttct cagatttcgt gtgccagtgc cccgaaggat ttgctgggaa gtgctgtgaa      360

atagatacca gggccacgtg ctacgaggac cagggcatca gctacagggg cacgtggagc      420

acagcggaga gtggcgccga gtgcaccaac tggaacagca gcgcgttggc ccagaagccc      480

tacagcgggc ggaggccaga cgccatcagg ctgggcctgg gaaccacaa ctactgcaga       540

aacccagatc gagactcaaa gccctggtgc tacgtcttta aggcggggaa gtacagctca      600

gagttctgca gcacccctgc ctgctctgag ggaaacagtg actgctactt tgggaatggg      660

tcagcctacc gtggcacgca gcctcacc gagtcgggtg cctcctgcct cccgtggaat        720

tccatgatcc tgataggcaa ggtttacaca gcacagaacc ccagtgccca ggcactgggc      780

ctgggcaaac ataattactg ccggaatcct gatggggatg ccaagccctg gtgccacgtg      840

ctgaagaacc gcaggctgac gtgggagtac tgtgatgtgc cctcctgctc cacctgcggc      900

ctgagacagt acagccagcc tcagtttcgc atcaaaggag ggctcttcgc cgacatcgcc      960

tcccacccct ggcaggctgc catctttgcc aagcacagga ggtcgccggg agagcggttc     1020

ctgtgcgggg gcatactcat cagctcctgc tggattctct ctgccgccca ctgcttccag     1080

gagaggtttc cgccccacca cctgacggtg atcttgggca gaacataccg ggtggtccct     1140

ggcgaggagg agcagaaatt tgaagtcgaa aaatacattg tccataagga attcgatgat     1200

gacacttacg acaatgacat tgcgctgctg cagctgaaat cggattcgtc ccgctgtgcc     1260

caggagagca gcgtggtccg cactgtgtgc cttcccccgg cggacctgca gctgccggac     1320

tggacggagt gtgagctctc cggctacggc aagcatgagg ccttgtctcc tttctattcg     1380

gagcggctga aggaggctca tgtcagactg taccatcca gccgctgcac atcacaacat       1440

ttacttaaca gaacagtcac cgacaacatg ctgtgtgctg agacactcg gagcggcggg       1500

ccccaggcaa acttgcacga cgcctgccag ggcgattcgg gaggcccccct ggtgtgtctg     1560

aacgatggcc gcatgacttt ggtgggcatc atcagctggg gcctgggctg tggacagaag     1620

gatgtcccgg gtgtgtacac caaggttacc aactacctag actggattcg tgacaacatg     1680

cgaccgtgac caggaacacc cgactcctca aaagcaaatg agatcc                    1726
```

<210>   26
<211>   562
<212>   PRT
<213>   Homo sapiens

<400>   26
```
Met Asp Ala Met Lys Arg Gly Leu Cys Cys Val Leu Leu Leu Cys Gly
1               5                   10                  15

Ala Val Phe Val Ser Pro Ser Gln Glu Ile His Ala Arg Phe Arg Arg
                20                  25                  30

Gly Ala Arg Ser Tyr Gln Val Ile Cys Arg Asp Glu Lys Thr Gln Met
            35                  40                  45
```

Ile Tyr Gln Gln His Gln Ser Trp Leu Arg Pro Val Leu Arg Ser Asn
    50   55   60

Arg Val Glu Tyr Cys Trp Cys Asn Ser Gly Arg Ala Gln Cys His Ser
65   70   75   80

Val Pro Val Lys Ser Cys Ser Glu Pro Arg Cys Phe Asn Gly Gly Thr
                85   90   95

Cys Gln Gln Ala Leu Tyr Phe Ser Asp Phe Val Cys Gln Cys Pro Glu
            100   105   110

Gly Phe Ala Gly Lys Cys Cys Glu Ile Asp Thr Arg Ala Thr Cys Tyr
            115   120   125

Glu Asp Gln Gly Ile Ser Tyr Arg Gly Thr Trp Ser Thr Ala Glu Ser
    130   135   140

Gly Ala Glu Cys Thr Asn Trp Asn Ser Ser Ala Leu Ala Gln Lys Pro
145   150   155   160

Tyr Ser Gly Arg Arg Pro Asp Ala Ile Arg Leu Gly Leu Gly Asn His
                165   170   175

Asn Tyr Cys Arg Asn Pro Asp Arg Asp Ser Lys Pro Trp Cys Tyr Val
            180   185   190

Phe Lys Ala Gly Lys Tyr Ser Ser Glu Phe Cys Ser Thr Pro Ala Cys
    195   200   205

Ser Glu Gly Asn Ser Asp Cys Tyr Phe Gly Asn Gly Ser Ala Tyr Arg
    210   215   220

Gly Thr His Ser Leu Thr Glu Ser Gly Ala Ser Cys Leu Pro Trp Asn
225   230   235   240

Ser Met Ile Leu Ile Gly Lys Val Tyr Thr Ala Gln Asn Pro Ser Ala
            245   250   255

Gln Ala Leu Gly Leu Gly Lys His Asn Tyr Cys Arg Asn Pro Asp Gly
            260   265   270

Asp Ala Lys Pro Trp Cys His Val Leu Lys Asn Arg Arg Leu Thr Trp
    275   280   285

Glu Tyr Cys Asp Val Pro Ser Cys Ser Thr Cys Gly Leu Arg Gln Tyr
    290   295   300

Ser Gln Pro Gln Phe Arg Ile Lys Gly Gly Leu Phe Ala Asp Ile Ala
305   310   315   320

Ser His Pro Trp Gln Ala Ala Ile Phe Ala Lys His Arg Arg Ser Pro
            325   330   335

Gly Glu Arg Phe Leu Cys Gly Gly Ile Leu Ile Ser Ser Cys Trp Ile
            340   345   350

Leu Ser Ala Ala His Cys Phe Gln Glu Arg Phe Pro Pro His His Leu
    355   360   365

Thr Val Ile Leu Gly Arg Thr Tyr Arg Val Val Pro Gly Glu Glu Glu
    370   375   380

Gln Lys Phe Glu Val Glu Lys Tyr Ile Val His Lys Glu Phe Asp Asp
385   390   395   400

Asp Thr Tyr Asp Asn Asp Ile Ala Leu Leu Gln Leu Lys Ser Asp Ser
                405   410   415

Ser Arg Cys Ala Gln Glu Ser Ser Val Val Arg Thr Val Cys Leu Pro
            420   425   430

Pro Ala Asp Leu Gln Leu Pro Asp Trp Thr Glu Cys Glu Leu Ser Gly
            435   440   445

Tyr Gly Lys His Glu Ala Leu Ser Pro Phe Tyr Ser Glu Arg Leu Lys
    450   455   460

Glu Ala His Val Arg Leu Tyr Pro Ser Ser Arg Cys Thr Ser Gln His
465   470   475   480

Leu Leu Asn Arg Thr Val Thr Asp Asn Met Leu Cys Ala Gly Asp Thr
            485   490   495

Arg Ser Gly Gly Pro Gln Ala Asn Leu His Asp Ala Cys Gln Gly Asp
            500   505   510

Ser Gly Gly Pro Leu Val Cys Leu Asn Asp Gly Arg Met Thr Leu Val
            515   520   525

Gly Ile Ile Ser Trp Gly Leu Gly Cys Gly Gln Lys Asp Val Pro Gly
    530   535   540

Val Tyr Thr Lys Val Thr Asn Tyr Leu Asp Trp Ile Arg Asp Asn Met
545   550   555   ·560

Arg Pro

<210>   27
<211>   825
<212>   DNA
<213>   Homo sapiens

<400>   27
atcactctct ttaatcacta ctcacattaa cctcaactcc tgccacaatg tacaggatgc   60

aactcctgtc ttgcattgca ctaattcttg cacttgtcac aaacagtgca cctacttcaa   120

gttcgacaaa gaaaacaaag aaaacacagc tacaactgga gcatttactg ctggatttac   180

agatgatttt gaatggaatt aataattaca agaatcccaa actcaccagg atgctcacat   240

ttaagtttta catgcccaag aaggccacag aactgaaaca gcttcagtgt ctagaagaag   300

aactcaaacc tctggaggaa gtgctgaatt tagctcaaag caaaaacttt cacttaagac   360

ccagggactt aatcagcaat atcaacgtaa tagttctgga actaaaggga tctgaaacaa   420

cattcatgtg tgaatatgca gatgagacag caaccattgt agaatttctg aacagatgga   480

ttaccttttg tcaaagcatc atctcaacac taacttgata attaagtgct tcccacttaa   540

aacatatcag gccttctatt tatttattta aatatttaaa ttttatattt attgttgaat   600

gtatggttgc tacctattgt aactattatt cttaatctta aaactataaa tatggatctt   660

ttatgattct ttttgtaagc cctaggggct ctaaaatggt ttaccttatt tatcccaaaa   720

atatttatta ttatgttgaa tgttaaatat agtatctatg tagattggtt agtaaaacta   780

tttaataaat ttgataaata taaaaaaaaa aaacaaaaaa aaaaa   825

```
<210>   28
<211>   156
<212>   PRT
<213>   Homo sapiens

<400>   28
Met Tyr Arg Met Gln Leu Leu Ser Cys Ile Ala Leu Ile Leu Ala Leu
1               5                   10                  15

Val Thr Asn Ser Ala Pro Thr Ser Ser Thr Lys Lys Thr Lys Lys
            20                  25                  30

Thr Gln Leu Gln Leu Glu His Leu Leu Leu Asp Leu Gln Met Ile Leu
        35                  40                  45

Asn Gly Ile Asn Asn Tyr Lys Asn Pro Lys Leu Thr Arg Met Leu Thr
    50                  55                  60

Phe Lys Phe Tyr Met Pro Lys Lys Ala Thr Glu Leu Lys Gln Leu Gln
65                  70                  75                  80

Cys Leu Glu Glu Glu Leu Lys Pro Leu Glu Glu Val Leu Asn Leu Ala
                85                  90                  95

Gln Ser Lys Asn Phe His Leu Arg Pro Arg Asp Leu Ile Ser Asn Ile
            100                 105                 110

Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu Thr Thr Phe Met Cys
            115                 120                 125

Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu Phe Leu Asn Arg Trp
    130                 135                 140

Ile Thr Phe Cys Gln Ser Ile Ile Ser Thr Leu Thr
145                 150                 155

<210>   29
<211>   7931
<212>   DNA
<213>   Homo sapiens

<400>   29
atgcaaatag agctctccac ctgcttcttt ctgtgccttt tgcgattctg ctttagtgcc     60

accagaagat actacctggg tgcagtggaa ctgtcatggg actatatgca aagtgatctc     120

ggtgagctgc ctgtggacgc aagatttcct cctagagtgc aaaatctttt ccattcaac     180

acctcagtcg tgtacaaaaa gactctgttt gtagaattca cggatcacct tttcaacatc     240

gctaagccaa ggccaccctg gatgggtctg ctaggtccta ccatccaggc tgaggtttat     300

gatacagtgg tcattacact taagaacatg gcttcccatc ctgtcagtct tcatgctgtt     360

ggtgtatcct actggaaagc ttctgaggga gctgaatatg atgatcagac cagtcaaagg     420

gagaaagaag atgataaagt cttccctggt ggaagccata catatgtctg gcaggtcctg     480

aaagagaatg gtccaatggc ctctgaccca ctgtgcctta cctactcata tctttctcat     540

gtggacctgg taaaagactt gaattcaggc ctcattggag ccctactagt atgtagagaa     600

gggagtctgg ccaaggaaaa gacacagacc ttgcacaaat ttatactact ttttgctgta     660

tttgatgaag ggaaagttg gcactcagaa acaaagaact ccttgatgca ggatagggat     720
```

```
gctgcatctg ctcgggcctg gcctaaaatg cacacagtca atggttatgt aaacaggtct    780

ctgccaggtc tgattggatg ccacaggaaa tcagtctatt ggcatgtgat tggaatgggc    840

accactcctg aagtgcactc aatattcctc gaaggtcaca catttcttgt gaggaaccat    900

cgccaggcgt ccttggaaat ctcgccaata actttcctta ctgctcaaac actcttgatg    960

gaccttggac agtttctact gttttgtcat atctcttccc accaacatga tggcatggaa   1020

gcttatgtca aagtagacag ctgtccagag aaccccaac tacgaatgaa aaataatgaa    1080

gaagcggaag actatgatga tgatcttact gattctgaaa tggatgtggt caggtttgat   1140

gatgacaact ctccttcctt tatccaaatt cgctcagttg ccaagaagca tcctaaaact   1200

tgggtacatt acattgctgc tgaagaggag gactgggact atgctccctt agtcctcgcc   1260

cccgatgaca gaagttataa aagtcaatat ttgaacaatg ccctcagcg gattggtagg    1320

aagtacaaaa aagtccgatt tatggcatac acagatgaaa cctttaagac tcgtgaagct   1380

attcagcatg aatcaggaat cttgggacct ttactttatg gggaagttgg agacacactg   1440

ttgattatat ttaagaatca agcaagcaga ccatataaca tctaccctca cggaatcact   1500

gatgtccgtc ctttgtattc aaggagatta ccaaaaggtg taaacatttg aaggattttt   1560

ccaattctgc caggagaaat attcaaatat aaatggacag tgactgtaga agatgggcca   1620

actaaatcag atcctcggtg cctgacccgc tattactcta gtttcgttaa tatggagaga   1680

gatctagctt caggactcat tggccctctc ctcatctgct acaaagaatc tgtagatcaa   1740

agaggaaacc agataatgtc agacaagagg aatgtcatcc tgttttctgt atttgatgag   1800

aaccgaagct ggtacctcac agagaatata caacgctttc tccccaatcc agctggagtg   1860

cagcttgagg atccagagtt ccaagcctcc aacatcatgc acagcatcaa tggctatgtt   1920

tttgatagtt tgcagttgtc agtttgtttg catgaggtgg catactggta cattctaagc   1980

attggagcac agactgactt cctttctgtc ttcttctctg gatatacctt caaacacaaa   2040

atggtctatg aagacacact caccctattc ccattctcag gagaaactgt cttcatgtcg   2100

atggaaaacc caggtctatg gattctgggg tgccacaact cagactttcg gaacagaggc   2160

atgaccgcct tactgaaggt ttctagttgt gacaagaaca ctggtgatta ttacgaggac   2220

agttatgaag atatttcagc atacttgctg agtaaaaaca atgccattga accaagaagc   2280

ttctcccaga attcaagaca ccgtagcact aggcaaaagc aatttaatgc caccacaatt   2340

ccagaaaatg acatagagaa gactgaccct tggtttgcac acagaacacc tatgcctaaa   2400

atacaaaatg tctcctctag tgatttgttg atgctcttgc gacagagtcc tactccacat   2460

gggctatcct tatctgatct ccaagaagcc aaatatgaga ctttttctga tgatccatca   2520

cctggagcaa tagacagtaa taacagcctg tctgaaatga cacacttcag gccacagctc   2580

catcacagtg gggacatggt atttacccct gagtcaggcc tccaattaag attaaatgag   2640

aaactgggga caactgcagc aacagagttg aagaaacttg atttcaaagt ttctagtaca   2700
```

```
tcaaataatc tgatttcaac aattccatca gacaatttgg cagcaggtac tgataataca  2760

agttccttag gaccccccaag tatgccagtt cattatgata gtcaattaga taccactcta  2820

tttggcaaaa agtcatctcc ccttactgag tctggtggac ctctgagctt gagtgaagaa  2880

aataatgatt caaagttgtt agaatcaggt ttaatgaata gccaagaaag ttcatgggga  2940

aaaaatgtat cgtcaacaga gagtggtagg ttatttaaag ggaaaagagc tcatggacct  3000

gctttgttga ctaaagataa tgccttattc aaagttagca tctctttgtt aaagacaaac  3060

aaaacttcca ataattcagc aactaataga aagactcaca ttgatggccc atcattatta  3120

attgagaata gtccatcagt ctggcaaaat atattagaaa gtgacactga gtttaaaaaa  3180

gtgacacctt tgattcatga cagaatgctt atggacaaaa atgctacagc tttgaggcta  3240

aatcatatgt caaataaaac tacttcatca aaaaacatgg aaatggtcca acagaaaaaa  3300

gagggcccca ttccaccaga tgcacaaaat ccagatatgt cgttctttaa gatgctattc  3360

ttgccagaat cagcaaggtg gatacaaagg actcatggaa agaactctct gaactctggg  3420

caaggcccca gtccaaagca attagtatcc ttaggaccag aaaaatctgt ggaaggtcag  3480

aatttcttgt ctgagaaaaa caaagtggta gtaggaaagg gtgaatttac aaaggacgta  3540

ggactcaaag agatggtttt tccaagcagc agaaacctat ttcttactaa cttggataat  3600

ttacatgaaa ataatacaca caatcaagaa aaaaaaattc aggaagaaat agaaaagaag  3660

gaaacattaa tccaagagaa tgtagttttg cctcagatac atacagtgac tggcactaag  3720

aatttcatga agaacctttt cttactgagc actaggcaaa atgtagaagg ttcatatgac  3780

ggggcatatg ctccagtact tcaagatttt aggtcattaa atgattcaac aaatagaaca  3840

aagaaacaca cagctcattt ctcaaaaaaa ggggaggaag aaaacttgga aggcttggga  3900

aatcaaacca agcaaattgt agagaaatat gcatgcacca caaggatatc tcctaataca  3960

agccagcaga attttgtcac gcaacgtagt aagagagctt tgaaacaatt cagactccca  4020

ctagaagaaa cagaacttga aaaaggata attgtggatg acacctcaac ccagtggtcc  4080

aaaaacatga aacatttgac cccgagcacc ctcacacaga tagactacaa tgagaaggag  4140

aaagggggcca ttactcagtc tcccttatca gattgcctta cgaggagtca tagcatccct  4200

caagcaaata gatctccatt acccattgca aaggtatcat catttccatc tattagacct  4260

atatatctga ccagggtcct attccaagac aactcttctc atcttccagc agcatcttat  4320

agaaagaaag attctggggt ccaagaaagc agtcatttct acaaggagc caaaaaaaat  4380

aacctttctt tagccattct aaccttggag atgactggtg atcaaagaga ggttggctcc  4440

ctggggacaa gtgccacaaa ttcagtcaca tacaagaaag ttgagaacac tgttctcccg  4500

aaaccagact tgcccaaaac atctggcaaa gttgaattgc ttccaaaagt tcacatttat  4560

cagaaggacc tattccctac ggaaactagc aatgggtctc ctggccatct ggatctcgtg  4620

gaagggagcc ttcttcaggg aacagaggga gcgattaagt ggaatgaagc aaacagacct  4680
```

```
ggaaaagttc cctttctgag agtagcaaca gaaagctctg caaagactcc ctccaagcta  4740

ttggatcctc ttgcttggga taaccactat ggtactcaga taccaaaaga agagtggaaa  4800

tcccaagaga agtcaccaga aaaaacagct tttaagaaaa aggataccat tttgtccctg  4860

aacgcttgtg aaagcaatca tgcaatagca gcaataaatg agggacaaaa taagcccgaa  4920

atagaagtca cctgggcaaa gcaaggtagg actgaaaggc tgtgctctca aaacccacca  4980

gtcttgaaac gccatcaacg ggaaataact cgtactactc ttcagtcaga tcaagaggaa  5040

attgactatg atgataccat atcagttgaa atgaagaagg aagattttga catttatgat  5100

gaggatgaaa atcagagccc ccgcagcttt caaaagaaaa cacgacacta ttttattgct  5160

gcagtggaga ggctctggga ttatgggatg agtagctccc cacatgttct aagaaacagg  5220

gctcagagtg gcagtgtccc tcagttcaag aaagttgttt ccaggaatt tactgatggc  5280

tcctttactc agcccttata ccgtggagaa ctaaatgaac atttgggact cctggggcca  5340

tatataagag cagaagttga agataatatc atggtaactt tcagaaatca ggcctctcgt  5400

ccctattcct tctattctag ccttatttct tatgaggaag atcagaggca aggagcagaa  5460

cctagaaaaa actttgtcaa gcctaatgaa accaaaactt acttttggaa agtgcaacat  5520

catatggcac ccactaaaga tgagtttgac tgcaaagcct gggcttattt ctctgatgtt  5580

gacctggaaa aagatgtgca ctcaggcctg attggacccc ttctggtctg ccacactaac  5640

acactgaacc ctgctcatgg gagacaagtg acagtacagg aatttgctct gtttttcacc  5700

atctttgatg agaccaaaag ctggtacttc actgaaaata tggaaagaaa ctgcagggct  5760

ccctgcaata tccagatgga agatcccact tttaaagaga attatcgctt ccatgcaatc  5820

aatggctaca taatggatac actacctggc ttagtaatgg ctcaggatca aaggattcga  5880

tggtatctgc tcagcatggg cagcaatgaa aacatccatt ctattcattt cagtggacat  5940

gtgttcactg tacgaaaaaa agaggagtat aaaatggcac tgtacaatct ctatccaggt  6000

gtttttgaga cagtggaaat gttaccatcc aaagctggaa tttggcgggt ggaatgcctt  6060

attggcgagc atctacatgc tgggatgagc acactttttc tggtgtacag caataagtgt  6120

cagactcccc tgggaatggc ttctggacac attagagatt ttcagattac agcttcagga  6180

caatatggac agtgggcccc aaagctggcc agacttcatt attccggatc aatcaatgcc  6240

tggagcacca aggagccctt ttcttggatc aaggtggatc tgttggcacc aatgattatt  6300

cacggcatca gacccagggt gcccgtcag aagttctcca gcctctacat ctctcagttt  6360

atcatcatgt atagtcttga tgggaagaag tggcagactt atcgaggaaa ttccactgga  6420

accttaatgg tcttctttgg caatgtggat tcatctggga taaaacacaa tattttttaac  6480

cctccaatta ttgctcgata catccgtttg cacccaactc attatagcat tcgcagcact  6540

cttcgcatgg agttgatggg ctgtgattta aatagttgca gcatgccatt gggaatggag  6600

agtaaagcaa tatcagatgc acagattact gcttcatcct actttaccaa tatgtttgcc  6660
```

```
acctggtctc cttcaaaagc tcgacttcac ctccaaggga ggagtaatgc ctggagacct    6720

caggtgaata atccaaaaga gtggctgcaa gtggacttcc agaagacaat gaaagtcaca    6780

ggagtaacta ctcagggagt aaaatctctg cttaccagca tgtatgtgaa ggagttcctc    6840

atctccagca gtcaagatgg ccatcagtgg actctctttt ttcagaatgg caaagtaaag    6900

gtttttcagg gaaatcaaga ctccttcaca cctgtggtga actctctaga cccaccgtta    6960

ctgactcgct accttcgaat tcacccccag agttgggtgc accagattgc cctgaggatg    7020

gaggttctgg gctgcgaggc acaggacctc tactgagggt ggccactgca gcacctgcca    7080

ctgccgtcac ctctccctcc tcagctccag ggcagtgtcc ctccctggct tgccttctac    7140

ctttgtgcta aatcctagca gacactgcct tgaagcctcc tgaattaact atcatcagtc    7200

ctgcatttct ttggtggggg gccaggaggg tgcatccaat ttaacttaac tcttacctat    7260

tttctgcagc tgctcccaga ttactccttc cttccaatat aactaggcaa aaagaagtga    7320

ggagaaacct gcatgaaagc attcttccct gaaaagttag gcctctcaga gtcaccactt    7380

cctctgttgt agaaaaacta tgtgatgaaa ctttgaaaaa gatatttatg atgttaacat    7440

ttcaggttaa gcctcatacg tttaaaataa aactctcagt tgtttattat cctgatcaag    7500

catggaacaa agcatgtttc aggatcagat caatacaatc ttggagtcaa aaggcaaatc    7560

atttggacaa tctgcaaaat ggagagaata caataactac tacagtaaag tctgtttctg    7620

cttccttaca catagatata attatgttat ttagtcatta tgaggggcac attcttatct    7680

ccaaaactag cattcttaaa ctgagaatta tagatggggt tcaagaatcc ctaagtcccc    7740

tgaaattata taaggcattc tgtataaatg caaatgtgca tttttctgac gagtgtccat    7800

agatataaag ccatttggtc ttaattctga ccaataaaaa aataagtcag gaggatgcaa    7860

ttgttgaaag ctttgaaata aaataacaat gtcttcttga aatttgtgat ggccaagaaa    7920

gaaaatgatg a                                                          7931
```

<210> 30
<211> 2351
<212> PRT
<213> Homo sapiens

<400> 30

```
Met Gln Ile Glu Leu Ser Thr Cys Phe Phe Leu Cys Leu Leu Arg Phe
1               5                   10                  15

Cys Phe Ser Ala Thr Arg Arg Tyr Tyr Leu Gly Ala Val Glu Leu Ser
            20                  25                  30

Trp Asp Tyr Met Gln Ser Asp Leu Gly Glu Leu Pro Val Asp Ala Arg
        35                  40                  45

Phe Pro Pro Arg Val Pro Lys Ser Phe Pro Phe Asn Thr Ser Val Val
    50                  55                  60

Tyr Lys Lys Thr Leu Phe Val Glu Phe Thr Asp His Leu Phe Asn Ile
65                  70                  75                  80

Ala Lys Pro Arg Pro Pro Trp Met Gly Leu Leu Gly Pro Thr Ile Gln
```

Ala Glu Val Tyr Asp Thr Val Val Ile Thr Leu Lys Asn Met Ala Ser
            100   105   110

His Pro Val Ser Leu His Ala Val Gly Val Ser Tyr Trp Lys Ala Ser
            115   120   125

Glu Gly Ala Glu Tyr Asp Asp Gln Thr Ser Gln Arg Glu Lys Glu Asp
    130   135   140

Asp Lys Val Phe Pro Gly Gly Ser His Thr Tyr Val Trp Gln Val Leu
145   150   155   160

Lys Glu Asn Gly Pro Met Ala Ser Asp Pro Leu Cys Leu Thr Tyr Ser
                165   170   175

Tyr Leu Ser His Val Asp Leu Val Lys Asp Leu Asn Ser Gly Leu Ile
            180   185   190

Gly Ala Leu Leu Val Cys Arg Glu Gly Ser Leu Ala Lys Glu Lys Thr
    195   200   205

Gln Thr Leu His Lys Phe Ile Leu Leu Phe Ala Val Phe Asp Glu Gly
    210   215   220

Lys Ser Trp His Ser Glu Thr Lys Asn Ser Leu Met Gln Asp Arg Asp
225   230   235   240

Ala Ala Ser Ala Arg Ala Trp Pro Lys Met His Thr Val Asn Gly Tyr
                245   250   255

Val Asn Arg Ser Leu Pro Gly Leu Ile Gly Cys His Arg Lys Ser Val
            260   265   270

Tyr Trp His Val Ile Gly Met Gly Thr Thr Pro Glu Val His Ser Ile
            275   280   285

Phe Leu Glu Gly His Thr Phe Leu Val Arg Asn His Arg Gln Ala Ser
    290   295   300

Leu Glu Ile Ser Pro Ile Thr Phe Leu Thr Ala Gln Thr Leu Leu Met
305   310   315   320

Asp Leu Gly Gln Phe Leu Leu Phe Cys His Ile Ser Ser His Gln His
                325   330   335

Asp Gly Met Glu Ala Tyr Val Lys Val Asp Ser Cys Pro Glu Glu Pro
            340   345   350

Gln Leu Arg Met Lys Asn Asn Glu Glu Ala Glu Asp Tyr Asp Asp Asp
            355   360   365

Leu Thr Asp Ser Glu Met Asp Val Val Arg Phe Asp Asp Asp Asn Ser
    370   375   380

Pro Ser Phe Ile Gln Ile Arg Ser Val Ala Lys Lys His Pro Lys Thr
385   390   395   400

Trp Val His Tyr Ile Ala Ala Glu Glu Glu Asp Trp Asp Tyr Ala Pro
            405   410   415

Leu Val Leu Ala Pro Asp Asp Arg Ser Tyr Lys Ser Gln Tyr Leu Asn
            420   425   430

Asn Gly Pro Gln Arg Ile Gly Arg Lys Tyr Lys Lys Val Arg Phe Met

```
          435                   440                   445
Ala Tyr Thr Asp Glu Thr Phe Lys Thr Arg Glu Ala Ile Gln His Glu
    450               455               460

Ser Gly Ile Leu Gly Pro Leu Leu Tyr Gly Glu Val Gly Asp Thr Leu
465               470               475               480

Leu Ile Ile Phe Lys Asn Gln Ala Ser Arg Pro Tyr Asn Ile Tyr Pro
            485               490               495

His Gly Ile Thr Asp Val Arg Pro Leu Tyr Ser Arg Arg Leu Pro Lys
            500               505               510

Gly Val Lys His Leu Lys Asp Phe Pro Ile Leu Pro Gly Glu Ile Phe
            515               520               525

Lys Tyr Lys Trp Thr Val Thr Val Glu Asp Gly Pro Thr Lys Ser Asp
    530               535               540

Pro Arg Cys Leu Thr Arg Tyr Tyr Ser Ser Phe Val Asn Met Glu Arg
545               550               555               560

Asp Leu Ala Ser Gly Leu Ile Gly Pro Leu Leu Ile Cys Tyr Lys Glu
            565               570               575

Ser Val Asp Gln Arg Gly Asn Gln Ile Met Ser Asp Lys Arg Asn Val
            580               585               590

Ile Leu Phe Ser Val Phe Asp Glu Asn Arg Ser Trp Tyr Leu Thr Glu
            595               600               605

Asn Ile Gln Arg Phe Leu Pro Asn Pro Ala Gly Val Gln Leu Glu Asp
    610               615               620

Pro Glu Phe Gln Ala Ser Asn Ile Met His Ser Ile Asn Gly Tyr Val
625               630               635               640

Phe Asp Ser Leu Gln Leu Ser Val Cys Leu His Glu Val Ala Tyr Trp
            645               650               655

Tyr Ile Leu Ser Ile Gly Ala Gln Thr Asp Phe Leu Ser Val Phe Phe
            660               665               670

Ser Gly Tyr Thr Phe Lys His Lys Met Val Tyr Glu Asp Thr Leu Thr
    675               680               685

Leu Phe Pro Phe Ser Gly Glu Thr Val Phe Met Ser Met Glu Asn Pro
    690               695               700

Gly Leu Trp Ile Leu Gly Cys His Asn Ser Asp Phe Arg Asn Arg Gly
705               710               715               720

Met Thr Ala Leu Leu Lys Val Ser Ser Cys Asp Lys Asn Thr Gly Asp
            725               730               735

Tyr Tyr Glu Asp Ser Tyr Glu Asp Ile Ser Ala Tyr Leu Leu Ser Lys
            740               745               750

Asn Asn Ala Ile Glu Pro Arg Ser Phe Ser Gln Asn Ser Arg His Arg
            755               760               765

Ser Thr Arg Gln Lys Gln Phe Asn Ala Thr Thr Ile Pro Glu Asn Asp
    770               775               780

Ile Glu Lys Thr Asp Pro Trp Phe Ala His Arg Thr Pro Met Pro Lys
```

```
      785                    790                    795                    800
Ile Gln Asn Val Ser Ser Ser Asp Leu Leu Met Leu Leu Arg Gln Ser
                805                    810                    815

Pro Thr Pro His Gly Leu Ser Leu Ser Asp Leu Gln Glu Ala Lys Tyr
                820                    825                    830

Glu Thr Phe Ser Asp Asp Pro Ser Pro Gly Ala Ile Asp Ser Asn Asn
                835                    840                    845

Ser Leu Ser Glu Met Thr His Phe Arg Pro Gln Leu His His Ser Gly
    850                    855                    860

Asp Met Val Phe Thr Pro Glu Ser Gly Leu Gln Leu Arg Leu Asn Glu
865                    870                    875                    880

Lys Leu Gly Thr Thr Ala Ala Thr Glu Leu Lys Lys Leu Asp Phe Lys
                885                    890                    895

Val Ser Ser Thr Ser Asn Asn Leu Ile Ser Thr Ile Pro Ser Asp Asn
                900                    905                    910

Leu Ala Ala Gly Thr Asp Asn Thr Ser Ser Leu Gly Pro Pro Ser Met
    915                    920                    925

Pro Val His Tyr Asp Ser Gln Leu Asp Thr Thr Leu Phe Gly Lys Lys
    930                    935                    940

Ser Ser Pro Leu Thr Glu Ser Gly Gly Pro Leu Ser Leu Ser Glu Glu
945                    950                    955                    960

Asn Asn Asp Ser Lys Leu Leu Glu Ser Gly Leu Met Asn Ser Gln Glu
                965                    970                    975

Ser Ser Trp Gly Lys Asn Val Ser Ser Thr Glu Ser Gly Arg Leu Phe
                980                    985                    990

Lys Gly Lys Arg Ala His Gly Pro  Ala Leu Leu Thr Lys  Asp Asn Ala
    995                    1000                   1005

Leu Phe  Lys Val Ser Ile Ser  Leu Leu Lys Thr Asn  Lys Thr Ser
    1010                   1015                   1020

Asn Asn  Ser Ala Thr Asn Arg  Lys Thr His Ile Asp  Gly Pro Ser
    1025                   1030                   1035

Leu Leu  Ile Glu Asn Ser Pro  Ser Val Trp Gln Asn  Ile Leu Glu
    1040                   1045                   1050

Ser Asp  Thr Glu Phe Lys Lys  Val Thr Pro Leu Ile  His Asp Arg
    1055                   1060                   1065

Met Leu  Met Asp Lys Asn Ala· Thr Ala Leu Arg Leu  Asn His Met
    1070                   1075                   1080

Ser Asn  Lys Thr Thr Ser Ser  Lys Asn Met Glu Met  Val Gln Gln
    1085                   1090                   1095

Lys Lys  Glu Gly Pro Ile Pro  Pro Asp Ala Gln Asn  Pro Asp Met
    1100                   1105                   1110

Ser Phe  Phe Lys Met Leu Phe  Leu Pro Glu Ser Ala  Arg Trp Ile
    1115                   1120                   1125

Gln Arg  Thr His Gly Lys Asn  Ser Leu Asn Ser Gly  Gln Gly Pro
```

```
                 1130                      1135                      1140
Ser Pro  Lys Gln Leu Val Ser  Leu Gly Pro Glu Lys  Ser Val Glu
    1145                      1150                      1155

Gly Gln  Asn Phe Leu Ser Glu  Lys Asn Lys Val Val  Val Gly Lys
    1160                      1165                      1170

Gly Glu  Phe Thr Lys Asp Val  Gly Leu Lys Glu Met  Val Phe Pro
    1175                      1180                      1185

Ser Ser  Arg Asn Leu Phe Leu  Thr Asn Leu Asp Asn  Leu His Glu
    1190                      1195                      1200

Asn Asn  Thr His Asn Gln Glu  Lys Lys Ile Gln Glu  Glu Ile Glu
    1205                      1210                      1215

Lys Lys  Glu Thr Leu Ile Gln  Glu Asn Val Val Leu  Pro Gln Ile
    1220                      1225                      1230

His Thr  Val Thr Gly Thr Lys  Asn Phe Met Lys Asn  Leu Phe Leu
    1235                      1240                      1245

Leu Ser  Thr Arg Gln Asn Val  Glu Gly Ser Tyr Asp  Gly Ala Tyr
    1250                      1255                      1260

Ala Pro  Val Leu Gln Asp Phe  Arg Ser Leu Asn Asp  Ser Thr Asn
    1265                      1270                      1275

Arg Thr  Lys Lys His Thr Ala  His Phe Ser Lys Lys  Gly Glu Glu
    1280                      1285                      1290

Glu Asn  Leu Glu Gly Leu Gly  Asn Gln Thr Lys Gln  Ile Val Glu
    1295                      1300                      1305

Lys Tyr  Ala Cys Thr Thr Arg  Ile Ser Pro Asn Thr  Ser Gln Gln
    1310                      1315                      1320

Asn Phe  Val Thr Gln Arg Ser  Lys Arg Ala Leu Lys  Gln Phe Arg
    1325                      1330                      1335

Leu Pro  Leu Glu Glu Thr Glu  Leu Glu Lys Arg Ile  Ile Val Asp
    1340                      1345                      1350

Asp Thr  Ser Thr Gln Trp Ser  Lys Asn Met Lys His  Leu Thr Pro
    1355                      1360                      1365

Ser Thr  Leu Thr Gln Ile Asp  Tyr Asn Glu Lys Glu  Lys Gly Ala
    1370                      1375                      1380

Ile Thr  Gln Ser Pro Leu Ser  Asp Cys Leu Thr Arg  Ser His Ser
    1385                      1390                      1395

Ile Pro  Gln Ala Asn Arg Ser  Pro Leu Pro Ile Ala  Lys Val Ser
    1400                      1405                      1410

Ser Phe  Pro Ser Ile Arg Pro  Ile Tyr Leu Thr Arg  Val Leu Phe
    1415                      1420                      1425

Gln Asp  Asn Ser Ser His Leu  Pro Ala Ala Ser Tyr  Arg Lys Lys
    1430                      1435                      1440

Asp Ser  Gly Val Gln Glu Ser  Ser His Phe Leu Gln  Gly Ala Lys
    1445                      1450                      1455

Lys Asn  Asn Leu Ser Leu Ala  Ile Leu Thr Leu Glu  Met Thr Gly
```

```
          1460                    1465                    1470

Asp Gln  Arg Glu Val Gly Ser  Leu Gly Thr Ser Ala  Thr Asn Ser
         1475                    1480                    1485

Val Thr  Tyr Lys Lys Val Glu  Asn Thr Val Leu Pro  Lys Pro Asp
         1490                    1495                    1500

Leu Pro  Lys Thr Ser Gly Lys  Val Glu Leu Leu Pro  Lys Val His
         1505                    1510                    1515

Ile Tyr  Gln Lys Asp Leu Phe  Pro Thr Glu Thr Ser  Asn Gly Ser
         1520                    1525                    1530

Pro Gly  His Leu Asp Leu Val  Glu Gly Ser Leu Leu  Gln Gly Thr
         1535                    1540                    1545

Glu Gly  Ala Ile Lys Trp Asn  Glu Ala Asn Arg Pro  Gly Lys Val
         1550                    1555                    1560

Pro Phe  Leu Arg Val Ala Thr  Glu Ser Ser Ala Lys  Thr Pro Ser
         1565                    1570                    1575

Lys Leu  Leu Asp Pro Leu Ala  Trp Asp Asn His Tyr  Gly Thr Gln
         1580                    1585                    1590

Ile Pro  Lys Glu Glu Trp Lys  Ser Gln Glu Lys Ser  Pro Glu Lys
         1595                    1600                    1605

Thr Ala  Phe Lys Lys Lys Asp  Thr Ile Leu Ser Leu  Asn Ala Cys
         1610                    1615                    1620

Glu Ser  Asn His Ala Ile Ala  Ala Ile Asn Glu Gly  Gln Asn Lys
         1625                    1630                    1635

Pro Glu  Ile Glu Val Thr Trp  Ala Lys Gln Gly Arg  Thr Glu Arg
         1640                    1645                    1650

Leu Cys  Ser Gln Asn Pro Pro  Val Leu Lys Arg His  Gln Arg Glu
         1655                    1660                    1665

Ile Thr  Arg Thr Thr Leu Gln  Ser Asp Gln Glu Glu  Ile Asp Tyr
         1670                    1675                    1680

Asp Asp  Thr Ile Ser Val Glu  Met Lys Lys Glu Asp  Phe Asp Ile
         1685                    1690                    1695

Tyr Asp  Glu Asp Glu Asn Gln  Ser Pro Arg Ser Phe  Gln Lys Lys
         1700                    1705                    1710

Thr Arg  His Tyr Phe Ile Ala  Ala Val Glu Arg Leu  Trp Asp Tyr
         1715                    1720                    1725

Gly Met  Ser Ser Ser Pro His  Val Leu Arg Asn Arg  Ala Gln Ser
         1730                    1735                    1740

Gly Ser  Val Pro Gln Phe Lys  Lys Val Val Phe Gln  Glu Phe Thr
         1745                    1750                    1755

Asp Gly  Ser Phe Thr Gln Pro  Leu Tyr Arg Gly Glu  Leu Asn Glu
         1760                    1765                    1770

His Leu  Gly Leu Leu Gly Pro  Tyr Ile Arg Ala Glu  Val Glu Asp
         1775                    1780                    1785

Asn Ile  Met Val Thr Phe Arg  Asn Gln Ala Ser Arg  Pro Tyr Ser
```

```
        1790                    1795                    1800

Phe Tyr Ser Ser Leu Ile Ser Tyr Glu Glu Asp Gln Arg Gln Gly
    1805                    1810                    1815

Ala Glu Pro Arg Lys Asn Phe Val Lys Pro Asn Glu Thr Lys Thr
    1820                    1825                    1830

Tyr Phe Trp Lys Val Gln His His Met Ala Pro Thr Lys Asp Glu
    1835                    1840                    1845

Phe Asp Cys Lys Ala Trp Ala Tyr Phe Ser Asp Val Asp Leu Glu
    1850                    1855                    1860

Lys Asp Val His Ser Gly Leu Ile Gly Pro Leu Leu Val Cys His
    1865                    1870                    1875

Thr Asn Thr Leu Asn Pro Ala His Gly Arg Gln Val Thr Val Gln
    1880                    1885                    1890

Glu Phe Ala Leu Phe Phe Thr Ile Phe Asp Glu Thr Lys Ser Trp
    1895                    1900                    1905

Tyr Phe Thr Glu Asn Met Glu Arg Asn Cys Arg Ala Pro Cys Asn
    1910                    1915                    1920

Ile Gln Met Glu Asp Pro Thr Phe Lys Glu Asn Tyr Arg Phe His
    1925                    1930                    1935

Ala Ile Asn Gly Tyr Ile Met Asp Thr Leu Pro Gly Leu Val Met
    1940                    1945                    1950

Ala Gln Asp Gln Arg Ile Arg Trp Tyr Leu Leu Ser Met Gly Ser
    1955                    1960                    1965

Asn Glu Asn Ile His Ser Ile His Phe Ser Gly His Val Phe Thr
    1970                    1975                    1980

Val Arg Lys Lys Glu Glu Tyr Lys Met Ala Leu Tyr Asn Leu Tyr
    1985                    1990                    1995

Pro Gly Val Phe Glu Thr Val Glu Met Leu Pro Ser Lys Ala Gly
    2000                    2005                    2010

Ile Trp Arg Val Glu Cys Leu Ile Gly Glu His Leu His Ala Gly
    2015                    2020                    2025

Met Ser Thr Leu Phe Leu Val Tyr Ser Asn Lys Cys Gln Thr Pro
    2030                    2035                    2040

Leu Gly Met Ala Ser Gly His Ile Arg Asp Phe Gln Ile Thr Ala
    2045                    2050                    2055

Ser Gly Gln Tyr Gly Gln Trp Ala Pro Lys Leu Ala Arg Leu His
    2060                    2065                    2070

Tyr Ser Gly Ser Ile Asn Ala Trp Ser Thr Lys Glu Pro Phe Ser
    2075                    2080                    2085

Trp Ile Lys Val Asp Leu Leu Ala Pro Met Ile Ile His Gly Ile
    2090                    2095                    2100

Lys Thr Gln Gly Ala Arg Gln Lys Phe Ser Ser Leu Tyr Ile Ser
    2105                    2110                    2115

Gln Phe Ile Ile Met Tyr Ser Leu Asp Gly Lys Lys Trp Gln Thr
```

```
            2120                      2125                     2130

Tyr Arg  Gly Asn Ser Thr Gly  Thr Leu Met Val Phe  Phe Gly Asn
    2135                 2140                 2145

Val Asp  Ser Ser Gly Ile Lys  His Asn Ile Phe Asn  Pro Pro Ile
    2150                 2155                 2160

Ile Ala  Arg Tyr Ile Arg Leu  His Pro Thr His Tyr  Ser Ile Arg
    2165                 2170                 2175

Ser Thr  Leu Arg Met Glu Leu  Met Gly Cys Asp Leu  Asn Ser Cys
    2180                 2185                 2190

Ser Met  Pro Leu Gly Met Glu  Ser Lys Ala Ile Ser  Asp Ala Gln
    2195                 2200                 2205

Ile Thr  Ala Ser Ser Tyr Phe  Thr Asn Met Phe Ala  Thr Trp Ser
    2210                 2215                 2220

Pro Ser  Lys Ala Arg Leu His  Leu Gln Gly Arg Ser  Asn Ala Trp
    2225                 2230                 2235

Arg Pro  Gln Val Asn Asn Pro  Lys Glu Trp Leu Gln  Val Asp Phe
    2240                 2245                 2250

Gln Lys  Thr Met Lys Val Thr  Gly Val Thr Thr Gln  Gly Val Lys
    2255                 2260                 2265

Ser Leu  Leu Thr Ser Met Tyr  Val Lys Glu Phe Leu  Ile Ser Ser
    2270                 2275                 2280

Ser Gln  Asp Gly His Gln Trp  Thr Leu Phe Phe Gln  Asn Gly Lys
    2285                 2290                 2295

Val Lys  Val Phe Gln Gly Asn  Gln Asp Ser Phe Thr  Pro Val Val
    2300                 2305                 2310

Asn Ser  Leu Asp Pro Pro Leu  Leu Thr Arg Tyr Leu  Arg Ile His
    2315                 2320                 2325

Pro Gln  Ser Trp Val His Gln  Ile Ala Leu Arg Met  Glu Val Leu
    2330                 2335                 2340

Gly Cys  Glu Ala Gln Asp Leu  Tyr
    2345                 2350

<210>   31
<211>   1471
<212>   DNA
<213>   Homo sapiens

<400>   31
atggcgcccg tcgccgtctg ggccgcgctg gccgtcggac tggagctctg ggctgcggcg      60

cacgccttgc ccgcccaggt ggcatttaca ccctacgccc cggagcccgg gagcacatgc     120

cggctcagag aatactatga ccagacagct cagatgtgct gcagcaaatg ctcgccgggc     180

caacatgcaa aagtcttctg taccaagacc tcggacaccg tgtgtgactc ctgtgaggac     240

agcacataca cccagctctg gaactgggtt cccgagtgct tgagctgtgg ctcccgctgt     300

agctctgacc aggtggaaac tcaagcctgc actcgggaac agaaccgcat ctgcacctgc     360

aggcccggct ggtactgcgc gctgagcaag caggagg ggt gccggctgtg cgcgccgctg     420
```

```
cgcaagtgcc gcccgggctt cggcgtggcc agaccaggaa ctgaaacatc agacgtggtg    480

tgcaagccct gtgccccggg gacgttctcc aacacgactt catccacgga tatttgcagg    540

ccccaccaga tctgtaacgt ggtggccatc cctgggaatg caagcatgga tgcagtctgc    600

acgtccacgt ccccacccg gagtatggcc caggggcag tacacttacc ccagccagtg     660

tccacacgat cccaacacac gcagccaact ccagaaccca gcactgctcc aagcacctcc    720

ttcctgctcc caatgggccc cagcccccca gctgaaggga gcactggcga cttcgctctt    780

ccagttggac tgattgtggg tgtgacagcc ttgggtctac taataatagg agtggtgaac    840

tgtgtcatca tgacccaggt gaaaaagaag cccttgtgcc tgcagagaga agccaaggtg    900

cctcacttgc ctgccgataa ggcccggggt acacagggcc ccgagcagca gcacctgctg    960

atcacagcgc cgagctccag cagcagctcc ctggagagct cggccagtgc gttggacaga    1020

agggcgccca ctcggaacca gccacaggca ccaggcgtgg aggccagtgg ggccggggag    1080

gcccgggcca gcaccgggag ctcagattct tcccctggtg gccatgggac ccaggtcaat    1140

gtcacctgca tcgtgaacgt ctgtagcagc tctgaccaca gctcacagtg ctcctcccaa    1200

gccagctcca caatgggaga cacagattcc agcccctcgg agtccccgaa ggacgagcag    1260

gtccccttct ccaaggagga atgtgccttt cggtcacagc tggagacgcc agagaccctg    1320

ctggggagca ccgaagagaa gcccctgccc cttggagtgc ctgatgctgg gatgaagccc    1380

agttaaccag gccggtgtgg gctgtgtcgt agccaaggtg ggctgagccc tggcaggatg    1440

accctgcgaa ggggccctgg tccttccagg c                                   1471
```

<210>   32
<211>   461
<212>   PRT
<213>   Homo sapiens

<400>   32
```
Met Ala Pro Val Ala Val Trp Ala Ala Leu Ala Val Gly Leu Glu Leu
1               5                   10                  15

Trp Ala Ala Ala His Ala Leu Pro Ala Gln Val Ala Phe Thr Pro Tyr
            20                  25                  30

Ala Pro Glu Pro Gly Ser Thr Cys Arg Leu Arg Glu Tyr Tyr Asp Gln
        35                  40                  45

Thr Ala Gln Met Cys Cys Ser Lys Cys Ser Pro Gly Gln His Ala Lys
    50                  55                  60

Val Phe Cys Thr Lys Thr Ser Asp Thr Val Cys Asp Ser Cys Glu Asp
65                  70                  75                  80

Ser Thr Tyr Thr Gln Leu Trp Asn Trp Val Pro Glu Cys Leu Ser Cys
                85                  90                  95

Gly Ser Arg Cys Ser Ser Asp Gln Val Glu Thr Gln Ala Cys Thr Arg
            100                 105                 110

Glu Gln Asn Arg Ile Cys Thr Cys Arg Pro Gly Trp Tyr Cys Ala Leu
        115                 120                 125
```

```
Ser Lys Gln Glu Gly Cys Arg Leu Cys Ala Pro Leu Arg Lys Cys Arg
    130             135             140
Pro Gly Phe Gly Val Ala Arg Pro Gly Thr Glu Thr Ser Asp Val Val
145             150             155             160
Cys Lys Pro Cys Ala Pro Gly Thr Phe Ser Asn Thr Thr Ser Ser Thr
                165             170             175
Asp Ile Cys Arg Pro His Gln Ile Cys Asn Val Val Ala Ile Pro Gly
            180             185             190
Asn Ala Ser Met Asp Ala Val Cys Thr Ser Thr Ser Pro Thr Arg Ser
            195             200             205
Met Ala Pro Gly Ala Val His Leu Pro Gln Pro Val Ser Thr Arg Ser
    210             215             220
Gln His Thr Gln Pro Thr Pro Glu Pro Ser Thr Ala Pro Ser Thr Ser
225             230             235             240
Phe Leu Leu Pro Met Gly Pro Ser Pro Ala Glu Gly Ser Thr Gly
                245             250             255
Asp Phe Ala Leu Pro Val Gly Leu Ile Val Gly Val Thr Ala Leu Gly
            260             265             270
Leu Leu Ile Ile Gly Val Val Asn Cys Val Ile Met Thr Gln Val Lys
            275             280             285
Lys Lys Pro Leu Cys Leu Gln Arg Glu Ala Lys Val Pro His Leu Pro
    290             295             300
Ala Asp Lys Ala Arg Gly Thr Gln Gly Pro Glu Gln Gln His Leu Leu
305             310             315             320
Ile Thr Ala Pro Ser Ser Ser Ser Ser Ser Leu Glu Ser Ser Ala Ser
            325             330             335
Ala Leu Asp Arg Arg Ala Pro Thr Arg Asn Gln Pro Gln Ala Pro Gly
            340             345             350
Val Glu Ala Ser Gly Ala Gly Glu Ala Arg Ala Ser Thr Gly Ser Ser
    355             360             365
Asp Ser Ser Pro Gly Gly His Gly Thr Gln Val Asn Val Thr Cys Ile
370             375             380
Val Asn Val Cys Ser Ser Ser Asp His Ser Ser Gln Cys Ser Ser Gln
385             390             395             400
Ala Ser Ser Thr Met Gly Asp Thr Asp Ser Ser Pro Ser Glu Ser Pro
            405             410             415
Lys Asp Glu Gln Val Pro Phe Ser Lys Glu Glu Cys Ala Phe Arg Ser
            420             425             430
Gln Leu Glu Thr Pro Glu Thr Leu Leu Gly Ser Thr Glu Glu Lys Pro
            435             440             445
Leu Pro Leu Gly Val Pro Asp Ala Gly Met Lys Pro Ser
    450             455             460
```

<210> 33
<211> 1475

<212> DNA
<213> Homo sapiens

<400> 33
tccacctgtc cccgcagcgc cggctcgcgc cctcctgccg cagccaccga gccgccgtct   60

agcgccccga cctcgccacc atgagagccc tgctggcgcg cctgcttctc tgcgtcctgg   120

tcgtgagcga ctccaaaggc agcaatgaac ttcatcaagt tccatcgaac tgtgactgtc   180

taaatggagg aacatgtgtg tccaacaagt acttctccaa cattcactgg tgcaactgcc   240

caaagaaatt cggagggcag cactgtgaaa tagataagtc aaaaacctgc tatgagggga   300

atggtcactt ttaccgagga aaggccagca ctgacaccat gggccggccc tgcctgccct   360

ggaactctgc cactgtcctt cagcaaacgt accatgccca cagatctgat gctcttcagc   420

tgggcctggg gaaacataat tactgcagga acccagacaa ccggaggcga ccctggtgct   480

atgtgcaggt gggcctaaag ccgcttgtcc aagagtgcat ggtgcatgac tgcgcagatg   540

gaaaaaagcc ctcctctcct ccagaagaat taaaatttca gtgtggccaa aagactctga   600

ggccccgctt taagattatt gggggagaat tcaccaccat cgagaaccag ccctggtttg   660

cggccatcta caggaggcac cggggggggct ctgtcaccta cgtgtgtgga ggcagcctca   720

tcagcccttg ctgggtgatc agcgccacac actgcttcat tgattaccca aagaaggagg   780

actacatcgt ctacctgggt cgctcaaggc ttaactccaa cacgcaaggg gagatgaagt   840

ttgaggtgga aaacctcatc ctacacaagg actacagcgc tgacacgctt gctcaccaca   900

acgacattgc cttgctgaag atccgttcca aggagggcag gtgtgcgcag ccatcccgga   960

ctatacagac catctgcctg ccctcgatgt ataacgatcc ccagtttggc acaagctgtg 1020

agatcactgg ctttggaaaa gagaattcta ccgactatct ctatccggag cagctgaaga 1080

tgactgttgt gaagctgatt tcccaccggg agtgtcagca gccccactac tacggctctg 1140

aagtcaccac caaaatgctg tgtgctgctg acccacagtg gaaaacagat tcctgccagg 1200

gagactcagg gggacccctc gtctgttccc tccaaggccg catgactttg actggaattg 1260

tgagctgggg ccgtggatgt gccctgaagg acaagccagg cgtctacacg agagtctcac 1320

acttcttacc ctggatccgc agtcacacca aggaagagaa tggcctggcc ctctgagggt 1380

ccccagggag gaaacgggca ccacccgctt tcttgctggt tgtcattttt gcagtagagt 1440

catctccatc agctgtaaga agagactggg aagat   1475

<210> 34
<211> 431
<212> PRT
<213> Homo sapiens

<400> 34
Met Arg Ala Leu Leu Ala Arg Leu Leu Leu Cys Val Leu Val Val Ser
1   5   10   15

Asp Ser Lys Gly Ser Asn Glu Leu His Gln Val Pro Ser Asn Cys Asp
                20   25   30

```
Cys Leu Asn Gly Gly Thr Cys Val Ser Asn Lys Tyr Phe Ser Asn Ile
    35              40                  45

His Trp Cys Asn Cys Pro Lys Lys Phe Gly Gly Gln His Cys Glu Ile
    50              55                  60

Asp Lys Ser Lys Thr Cys Tyr Glu Gly Asn Gly His Phe Tyr Arg Gly
65              70                  75                      80

Lys Ala Ser Thr Asp Thr Met Gly Arg Pro Cys Leu Pro Trp Asn Ser
                85                  90                  95

Ala Thr Val Leu Gln Gln Thr Tyr His Ala His Arg Ser Asp Ala Leu
            100             105                 110

Gln Leu Gly Leu Gly Lys His Asn Tyr Cys Arg Asn Pro Asp Asn Arg
        115             120             125

Arg Arg Pro Trp Cys Tyr Val Gln Val Gly Leu Lys Pro Leu Val Gln
    130             135                 140

Glu Cys Met Val His Asp Cys Ala Asp Gly Lys Lys Pro Ser Ser Pro
145             150                 155                 160

Pro Glu Glu Leu Lys Phe Gln Cys Gly Gln Lys Thr Leu Arg Pro Arg
                165                 170                 175

Phe Lys Ile Ile Gly Gly Glu Phe Thr Thr Ile Glu Asn Gln Pro Trp
            180                 185                 190

Phe Ala Ala Ile Tyr Arg Arg His Arg Gly Gly Ser Val Thr Tyr Val
        195             200                 205

Cys Gly Gly Ser Leu Ile Ser Pro Cys Trp Val Ile Ser Ala Thr His
    210             215                 220

Cys Phe Ile Asp Tyr Pro Lys Lys Glu Asp Tyr Ile Val Tyr Leu Gly
225             230                 235                     240

Arg Ser Arg Leu Asn Ser Asn Thr Gln Gly Glu Met Lys Phe Glu Val
            245                 250                 255

Glu Asn Leu Ile Leu His Lys Asp Tyr Ser Ala Asp Thr Leu Ala His
            260             265                 270

His Asn Asp Ile Ala Leu Leu Lys Ile Arg Ser Lys Glu Gly Arg Cys
        275             280             285

Ala Gln Pro Ser Arg Thr Ile Gln Thr Ile Cys Leu Pro Ser Met Tyr
290             295                 300

Asn Asp Pro Gln Phe Gly Thr Ser Cys Glu Ile Thr Gly Phe Gly Lys
305             310             315                     320

Glu Asn Ser Thr Asp Tyr Leu Tyr Pro Glu Gln Leu Lys Met Thr Val
            325             330                 335

Val Lys Leu Ile Ser His Arg Glu Cys Gln Gln Pro His Tyr Tyr Gly
        340             345                 350

Ser Glu Val Thr Thr Lys Met Leu Cys Ala Ala Asp Pro Gln Trp Lys
    355                 360                 365

Thr Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys Ser Leu
    370             375                 380
```

Gln Gly Arg Met Thr Leu Thr Gly Ile Val Ser Trp Gly Arg Gly Cys
385   390   395   400

Ala Leu Lys Asp Lys Pro Gly Val Tyr Thr Arg Val Ser His Phe Leu
                405   410   415

Pro Trp Ile Arg Ser His Thr Lys Glu Glu Asn Gly Leu Ala Leu
            420   425   430

<210>   35
<211>   107
<212>   PRT
<213>   Mus musculus

<400>   35
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1   5   10   15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asp Val Asn Thr Ala
            20   25   30

Val Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
        35   40   45

Tyr Ser Ala Ser Phe Leu Tyr Ser Gly Val Pro Ser Arg Phe Ser Gly
    50   55   60

Ser Arg Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65   70   75   80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Pro
            85   90   95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
            100   105

<210>   36
<211>   120
<212>   PRT
<213>   Mus musculus

<400>   36
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1   5   10   15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile Lys Asp Thr
            20   25   30

Tyr Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
        35   40   45

Ala Arg Ile Tyr Pro Thr Asn Gly Tyr Thr Arg Tyr Ala Asp Ser Val
    50   55   60

Lys Gly Arg Phe Thr Ile Ser Ala Asp Thr Ser Lys Asn Thr Ala Tyr
65   70   75   80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
            85   90   95

Ser Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln
            100   105   110

Gly Thr Leu Val Thr Val Ser Ser
        115   120

<210> 37
<211> 120
<212> PRT
<213> Mus musculus

<400> 37
Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln
1   5   10   15

Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser Thr Ser
            20   25   30

Gly Met Ser Val Gly Trp Ile Arg Gln Pro Ser Gly Lys Ala Leu Glu
        35   40   45

Trp Leu Ala Asp Ile Trp Trp Asp Asp Lys Lys Asp Tyr Asn Pro Ser
    50   55   60

Leu Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val
65   70   75   80

Val Leu Lys Val Thr Asn Met Asp Pro Ala Asp Thr Ala Thr Tyr Tyr
                85   90   95

Cys Ala Arg Ser Met Ile Thr Asn Trp Tyr Phe Asp Val Trp Gly Ala
            100   105   110

Gly Thr Thr Val Thr Val Ser Ser
        115   120

<210> 38
<211> 106
<212> PRT
<213> Mus musculus

<400> 38
Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val Gly
1   5   10   15

Asp Arg Val Thr Ile Thr Cys Lys Cys Gln Leu Ser Val Gly Tyr Met
            20   25   30

His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Trp Ile Tyr
        35   40   45

Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Ser Arg Phe Ser Gly Ser
    50   55   60

Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Asp
65   70   75   80

Asp Phe Ala Thr Tyr Tyr Cys Phe Gln Gly Ser Gly Tyr Pro Phe Thr
                85   90   95

Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
            100   105

<210> 39
<211> 1039
<212> DNA
<213> Homo sapiens

<400> 39
tcctgcacag gcagtgcctt gaagtgcttc ttcagagacc tttcttcata gactactttt   60

ttttctttaa gcagcaaaag gagaaaattg tcatcaaagg atattccaga ttcttgacag   120

```
cattctcgtc atctctgagg acatcaccat catctcagga tgaggggcat gaagctgctg    180

ggggcgctgc tggcactggc ggccctactg caggggggccg tgtccctgaa gatcgcagcc    240

ttcaacatcc agacatttgg ggagaccaag atgtccaatg ccaccctcgt cagctacatt    300

gtgcagatcc tgagccgcta tgacatcgcc ctggtccagg aggtcagaga cagccacctg    360

actgccgtgg ggaagctgct ggacaacctc aatcaggatg caccagacac ctatcactac    420

gtggtcagtg agccactggg acggaacagc tataaggagc gctacctgtt cgtgtacagg    480

cctgaccagg tgtctgcggt ggacagctac tactacgatg atggctgcga gccctgcggg    540

aacgacacct tcaaccgaga gccagccatt gtcaggttct ctcccggtt cacagaggtc    600

agggagtttg ccattgttcc cctgcatgcg gccccgggggg acgcagtagc cgagatcgac    660

gctctctatg acgtctacct ggatgtccaa gagaaatggg gcttggagga cgtcatgttg    720

atgggcgact tcaatgcggg ctgcagctat gtgagaccct cccagtggtc atccatccgc    780

ctgtggacaa gccccacctt ccagtggctg atccccgaca gcgctgacac cacagctaca    840

cccacgcact gtgcctatga caggatcgtg gttgcaggga tgctgctccg aggcgccgtt    900

gttcccgact cggctcttcc ctttaacttc caggctgcct atggcctgag tgaccaactg    960

gcccaagcca tcagtgacca ctatccagtg gaggtgatgc tgaagtgagc agcccctccc   1020

cacaccagtt gaactgcag                                                 1039
```

<210>   40
<211>   282
<212>   PRT
<213>   Homo sapiens

<400>   40
```
Met Arg Gly Met Lys Leu Leu Gly Ala Leu Leu Ala Leu Ala Ala Leu
1               5                   10                  15

Leu Gln Gly Ala Val Ser Leu Lys Ile Ala Ala Phe Asn Ile Gln Thr
                20                  25                  30

Phe Gly Glu Thr Lys Met Ser Asn Ala Thr Leu Val Ser Tyr Ile Val
        35                  40                  45

Gln Ile Leu Ser Arg Tyr Asp Ile Ala Leu Val Gln Glu Val Arg Asp
    50                  55                  60

Ser His Leu Thr Ala Val Gly Lys Leu Leu Asp Asn Leu Asn Gln Asp
65                  70                  75                  80

Ala Pro Asp Thr Tyr His Tyr Val Val Ser Glu Pro Leu Gly Arg Asn
                85                  90                  95

Ser Tyr Lys Glu Arg Tyr Leu Phe Val Tyr Arg Pro Asp Gln Val Ser
            100                 105                 110

Ala Val Asp Ser Tyr Tyr Tyr Asp Asp Gly Cys Glu Pro Cys Gly Asn
            115                 120                 125

Asp Thr Phe Asn Arg Glu Pro Ala Ile Val Arg Phe Phe Ser Arg Phe
    130                 135                 140
```

Thr Glu Val Arg Glu Phe Ala Ile Val Pro Leu His Ala Ala Pro Gly
145   150   155   160

Asp Ala Val Ala Glu Ile Asp Ala Leu Tyr Asp Val Tyr Leu Asp Val
                165   170   175

Gln Glu Lys Trp Gly Leu Glu Asp Val Met Leu Met Gly Asp Phe Asn
            180   185   190

Ala Gly Cys Ser Tyr Val Arg Pro Ser Gln Trp Ser Ser Ile Arg Leu
            195   200   205

Trp Thr Ser Pro Thr Phe Gln Trp Leu Ile Pro Asp Ser Ala Asp Thr
    210   215   220

Thr Ala Thr Pro Thr His Cys Ala Tyr Asp Arg Ile Val Val Ala Gly
225   230   235   240

Met Leu Leu Arg Gly Ala Val Val Pro Asp Ser Ala Leu Pro Phe Asn
            245   250   255

Phe Gln Ala Ala Tyr Gly Leu Ser Asp Gln Leu Ala Gln Ala Ile Ser
            260   265   270

Asp His Tyr Pro Val Glu Val Met Leu Lys
        275   280

<210>   41
<211>   678
<212>   DNA
<213>   Mus musculus

<400>   41
gacatcttgc tgactcagtc tccagccatc ctgtctgtga gtccaggaga aagagtcagt   60

ttctcctgca gggccagtca gttcgttggc tcaagcatcc actggtatca gcaaagaaca   120

aatggttctc caaggcttct cataaagtat gcttctgagt ctatgtctgg gatcccttcc   180

aggtttagtg gcagtggatc agggacagat tttactctta gcatcaacac tgtggagtct   240

gaagatattg cagattatta ctgtcaacaa agtcatagct ggccattcac gttcggctcg   300

gggacaaatt tggaagtaaa agaagtgaag cttgaggagt ctggaggagg cttggtgcaa   360

cctggaggat ccatgaaact ctcctgtgtt gcctctggat tcattttcag taaccactgg   420

atgaactggg tccgccagtc tccagagaag gggcttgagt gggttgctga aattagatca   480

aaatctatta attctgcaac acattatgcg gagtctgtga agggaggtt caccatctca   540

agagatgatt ccaaaagtgc tgtctacctg caaatgaccg acttaagaac tgaagacact   600

ggcgtttatt actgttccag gaattactac ggtagtacct acgactactg gggccaaggc   660

accactctca cagtctcc   678

<210>   42
<211>   226
<212>   PRT
<213>   Mus musculus

<400>   42
Asp Ile Leu Leu Thr Gln Ser Pro Ala Ile Leu Ser Val Ser Pro Gly
1   5   10   15

```
Glu Arg Val Ser Phe Ser Cys Arg Ala Ser Gln Phe Val Gly Ser Ser
            20                  25              30

Ile His Trp Tyr Gln Gln Arg Thr Asn Gly Ser Pro Arg Leu Leu Ile
        35              40              45

Lys Tyr Ala Ser Glu Ser Met Ser Gly Ile Pro Ser Arg Phe Ser Gly
    50              55              60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Ser Ile Asn Thr Val Glu Ser
65              70              75                  80

Glu Asp Ile Ala Asp Tyr Tyr Cys Gln Gln Ser His Ser Trp Pro Phe
            85              90              95

Thr Phe Gly Ser Gly Thr Asn Leu Glu Val Lys Glu Val Lys Leu Glu
        100             105             110

Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Met Lys Leu Ser
    115             120             125

Cys Val Ala Ser Gly Phe Ile Phe Ser Asn His Trp Met Asn Trp Val
    130             135             140

Arg Gln Ser Pro Glu Lys Gly Leu Glu Trp Val Ala Glu Ile Arg Ser
145             150             155             160

Lys Ser Ile Asn Ser Ala Thr His Tyr Ala Glu Ser Val Lys Gly Arg
            165             170             175

Phe Thr Ile Ser Arg Asp Asp Ser Lys Ser Ala Val Tyr Leu Gln Met
        180             185             190

Thr Asp Leu Arg Thr Glu Asp Thr Gly Val Tyr Tyr Cys Ser Arg Asn
        195             200             205

Tyr Tyr Gly Ser Thr Tyr Asp Tyr Trp Gly Gln Gly Thr Thr Leu Thr
    210             215             220

Val Ser
225

<210>   43
<211>   450
<212>   DNA
<213>   Homo sapiens

<400>   43
gctgcatcag aagaggccat caagcacatc actgtccttc tgccatggcc ctgtggatgc      60

gcctcctgcc cctgctggcg ctgctggccc tctggggacc tgacccagcc gcagcctttg     120

tgaaccaaca cctgtgcggc tcacacctgg tggaagctct ctacctagtg tgcggggaac     180

gaggcttctt ctacacaccc aagacccgcc gggaggcaga ggacctgcag gtggggcagg     240

tggagctggg cgggggccct ggtgcaggca gcctgcagcc cttggccctg gaggggtccc     300

tgcagaagcg tggcattgtg aacaatgct gtaccagcat ctgctccctc taccagctgg     360

agaactactg caactagacg cagcccgcag gcagcccccc acccgccgcc tcctgcaccg     420

agagagatgg aataaagccc ttgaaccagc                                      450

<210>   44
<211>   110
```

<212> PRT
<213> Homo sapiens

<400> 44
Met Ala Leu Trp Met Arg Leu Leu Pro Leu Leu Ala Leu Leu Ala Leu
1   5   10   15

Trp Gly Pro Asp Pro Ala Ala Ala Phe Val Asn Gln His Leu Cys Gly
            20   25   30

Ser His Leu Val Glu Ala Leu Tyr Leu Val Cys Gly Glu Arg Gly Phe
            35   40   45

Phe Tyr Thr Pro Lys Thr Arg Arg Glu Ala Glu Asp Leu Gln Val Gly
        50   55   60

Gln Val Glu Leu Gly Gly Gly Pro Gly Ala Gly Ser Leu Gln Pro Leu
65   70   75   80

Ala Leu Glu Gly Ser Leu Gln Lys Arg Gly Ile Val Glu Gln Cys Cys
                85   90   95

Thr Ser Ile Cys Ser Leu Tyr Gln Leu Glu Asn Tyr Cys Asn
                100   105   110

<210> 45
<211> 1203
<212> DNA
<213> Hepatitis B virus

<400> 45
atgggaggtt ggtcttccaa acctcgacaa ggcatgggga cgaatctttc tgttcccaat   60

cctctgggat tctttccga tcaccagttg gaccctgcgt tcggagccaa ctcaaacaat   120

ccagattggg acttcaaccc caacaaggat cactggccag aggcaatcaa ggtaggagcg   180

ggagacttcg gccagggtt caccccacca cacggcggtc ttttggggtg gagccctcag   240

gctcagggca tattgacaac agtgccagca gcgcctcctc ctgtttccac caatcggcag   300

tcaggaagac agcctactcc catctctcca cctctaagag acagtcatcc tcaggccatg   360

cagtggaact ccacaacatt ccaccaagct ctgctagatc ccagagtgag gggcctatat   420

tttcctgctg gtggctccag ttccggaaca gtaaaccctg ttccgactac tgtctcaccc   480

atatcgtcaa tcttctcgag gactggggac cctgcaccga acatggagag cacaacatca   540

ggattcctag gacccctgct cgtgttacag gcggggtttt tcttgttgac aagaatcctc   600

acaataccac agagtctaga ctcgtggtgg acttctctca attttctagg gggagcaccc   660

acgtgtcctg gccaaaattc gcagtcccca acctccaatc actcaccaac ctcttgtcct   720

ccaatttgtc ctggttatcg ctggatgtgt ctgcggcgtt ttatcatatt cctcttcatc   780

ctgctgctat gcctcatctt cttgttggtt cttctggact accaaggtat gttgcccgtt   840

tgtcctctac ttccaggaac atcaactacc agcacgggac catgcaagac ctgcacgatt   900

cctgctcaag gaacctctat gtttccctct gttgctgta caaaaccttc ggacggaaac   960

tgcacttgta ttcccatccc atcatcctgg gctttcgcaa gattcctatg ggagtgggcc 1020

tcagtccgtt tctcctggct cagtttacta gtgccatttg ttcagtggtt cgcagggctt 1080

```
tcccccactg tttggctttc agttatatgg atgatgtggt attggggggcc aagtctgtac     1140

aacatcttga gtcccttttt acctctatta ccaattttct tttgtctttg ggtatacatt     1200

tga                                                                   1203
```

<210> 46
<211> 400
<212> PRT
<213> Hepatitis B virus

<400> 46

```
Met Gly Gly Trp Ser Ser Lys Pro Arg Gln Gly Met Gly Thr Asn Leu
1               5                   10                  15

Ser Val Pro Asn Pro Leu Gly Phe Phe Pro Asp His Gln Leu Asp Pro
                20                  25                  30

Ala Phe Gly Ala Asn Ser Asn Asn Pro Asp Trp Asp Phe Asn Pro Asn
            35                  40                  45

Lys Asp His Trp Pro Glu Ala Ile Lys Val Gly Ala Gly Asp Phe Gly
        50                  55                  60

Pro Gly Phe Thr Pro Pro His Gly Gly Leu Leu Gly Trp Ser Pro Gln
65                  70                  75                  80

Ala Gln Gly Ile Leu Thr Thr Val Pro Ala Ala Pro Pro Pro Val Ser
                85                  90                  95

Thr Asn Arg Gln Ser Gly Arg Gln Pro Thr Pro Ile Ser Pro Pro Leu
            100                 105                 110

Arg Asp Ser His Pro Gln Ala Met Gln Trp Asn Ser Thr Thr Phe His
            115                 120                 125

Gln Ala Leu Leu Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala Gly
        130                 135                 140

Gly Ser Ser Ser Gly Thr Val Asn Pro Val Pro Thr Thr Val Ser Pro
145                 150                 155                 160

Ile Ser Ser Ile Phe Ser Arg Thr Gly Asp Pro Ala Pro Asn Met Glu
                165                 170                 175

Ser Thr Thr Ser Gly Phe Leu Gly Pro Leu Leu Val Leu Gln Ala Gly
            180                 185                 190

Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile Pro Gln Ser Leu Asp Ser
            195                 200                 205

Trp Trp Thr Ser Leu Asn Phe Leu Gly Gly Ala Pro Thr Cys Pro Gly
        210                 215                 220

Gln Asn Ser Gln Ser Pro Thr Ser Asn His Ser Pro Thr Ser Cys Pro
225                 230                 235                 240

Pro Ile Cys Pro Gly Tyr Arg Trp Met Cys Leu Arg Arg Phe Ile Ile
                245                 250                 255

Phe Leu Phe Ile Leu Leu Leu Cys Leu Ile Phe Leu Leu Val Leu Leu
            260                 265                 270

Asp Tyr Gln Gly Met Leu Pro Val Cys Pro Leu Leu Pro Gly Thr Ser
        275                 280                 285
```

```
Thr Thr Ser Thr Gly Pro Cys Lys Thr Cys Thr Ile Pro Ala Gln Gly
    290             295             300
Thr Ser Met Phe Pro Ser Cys Cys Cys Thr Lys Pro Ser Asp Gly Asn
305             310             315             320
Cys Thr Cys Ile Pro Ile Pro Ser Ser Trp Ala Phe Ala Arg Phe Leu
            325             330             335
Trp Glu Trp Ala Ser Val Arg Phe Ser Trp Leu Ser Leu Leu Val Pro
            340             345             350
Phe Val Gln Trp Phe Ala Gly Leu Ser Pro Thr Val Trp Leu Ser Val
            355             360             365
Ile Trp Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr Asn Ile Leu Ser
    370             375             380
Pro Phe Leu Pro Leu Leu Pro Ile Phe Phe Cys Leu Trp Val Tyr Ile
385             390             395             400
```

<210> 47
<211> 799
<212> DNA
<213> Homo sapiens

<400> 47
```
cgaaccactc agggtcctgt ggacagctca cctagctgca atggctacag gctcccggac   60

gtccctgctc ctggcttttg gcctgctctg cctgccctgg cttcaagagg gcagtgcctt  120

cccaaccatt cccttatcca ggccttttga caacgctatg ctccgcgccc atcgtctgca  180

ccagctggcc tttgacacct accaggagtt tgaagaagcc tatatcccaa aggaacagaa  240

gtattcattc ctgcagaacc cccagacctc cctctgtttc tcagagtcta ttccgacacc  300

ctccaacagg gaggaaacac aacagaaatc caacctagag ctgctccgca tctccctgct  360

gctcatccag tcgtggctgg agcccgtgca gttcctcagg agtgtcttcg ccaacagcct  420

ggtgtacggc gcctctgaca gcaacgtcta tgacctccta aaggacctag aggaaggcat  480

ccaaacgctg atggggaggc tggaagatgg cagcccccgg actgggcaga tcttcaagca  540

gacctacagc aagttcgaca caaactcaca caacgatgac gcactactca gaactacgg   600

gctgctctac tgcttcagga aggacatgga caaggtcgag acattcctgc gcatcgtgca  660

gtgccgctct gtggagggca gctgtggctt ctagctgccc gggtggcatc cctgtgaccc  720

ctccccagtg cctctcctgg ccctggaagt tgccactcca gtgcccacca gccttgtcct  780

aataaaatta agttgcatc                                                799
```

<210> 48
<211> 217
<212> PRT
<213> Homo sapiens

<400> 48
```
Met Ala Thr Gly Ser Arg Thr Ser Leu Leu Leu Ala Phe Gly Leu Leu
1               5               10              15
Cys Leu Pro Trp Leu Gln Glu Gly Ser Ala Phe Pro Thr Ile Pro Leu
```

```
                 20                        25                        30

Ser Arg Pro Phe Asp Asn Ala Met Leu Arg Ala His Arg Leu His Gln
        35                  40                  45

Leu Ala Phe Asp Thr Tyr Gln Glu Phe Glu Glu Ala Tyr Ile Pro Lys
        50                  55                  60

Glu Gln Lys Tyr Ser Phe Leu Gln Asn Pro Gln Thr Ser Leu Cys Phe
65                  70                  75                      80

Ser Glu Ser Ile Pro Thr Pro Ser Asn Arg Glu Glu Thr Gln Gln Lys
                85                  90                  95

Ser Asn Leu Glu Leu Leu Arg Ile Ser Leu Leu Leu Ile Gln Ser Trp
            100                 105                 110

Leu Glu Pro Val Gln Phe Leu Arg Ser Val Phe Ala Asn Ser Leu Val
            115                 120                 125

Tyr Gly Ala Ser Asp Ser Asn Val Tyr Asp Leu Leu Lys Asp Leu Glu
        130                 135                 140

Glu Gly Ile Gln Thr Leu Met Gly Arg Leu Glu Asp Gly Ser Pro Arg
145                 150                 155                 160

Thr Gly Gln Ile Phe Lys Gln Thr Tyr Ser Lys Phe Asp Thr Asn Ser
                165                 170                 175

His Asn Asp Asp Ala Leu Leu Lys Asn Tyr Gly Leu Leu Tyr Cys Phe
            180                 185                 190

Arg Lys Asp Met Asp Lys Val Glu Thr Phe Leu Arg Ile Val Gln Cys
            195                 200                 205

Arg Ser Val Glu Gly Ser Cys Gly Phe
    210                 215

<210>   49
<211>   963
<212>   DNA
<213>   Homo sapiens

<400>   49
atggagacag acacactcct gttatgggtg ctgctgctct gggttccagg ttccactggt      60

gacgtcaggc gagggccccg gagcctgcgg ggcagggacg cgccagcccc cacgccctgc     120

gtcccggccg agtgcttcga cctgctggtc cgccactgcg tggcctgcgg gctcctgcgc     180

acgccgcggc cgaaaccggc cggggccagc agccctgcgc caggacggc gctgcagccg      240

caggagtcgg tgggcgcggg ggccggcgag gcggcggtcg acaaaactca cacatgccca     300

ccgtgcccag cacctgaact cctggggga ccgtcagtct tcctcttccc cccaaaaccc      360

aaggacaccc tcatgatctc ccggacccct gaggtcacat gcgtggtggt ggacgtgagc     420

cacgaagacc ctgaggtcaa gttcaactgg tacgtggacg gcgtggaggt gcataatgcc     480

aagacaaagc cgcgggagga gcagtacaac agcacgtacc gtgtggtcag cgtcctcacc     540

gtcctgcacc aggactggct gaatggcaag gagtacaagt gcaaggtctc caacaaagcc     600

ctcccagccc ccatcgagaa aaccatctcc aaagccaaag ggcagccccg agaaccacag     660
```

```
gtgtacaccc tgcccccatc ccgggatgag ctgaccaaga accaggtcag cctgacctgc    720

ctggtcaaag gcttctatcc cagcgacatc gccgtggagt gggagagcaa tgggcagccg    780

gagaacaact acaagaccac gcctcccgtg ttggactccg acggctcctt cttcctctac    840

agcaagctca ccgtggacaa gagcaggtgg cagcagggga cgtcttctc atgctccgtg     900

atgcatgagg ctctgcacaa ccactacacg cagaagagcc tctccctgtc tcccgggaaa    960

tga                                                                 963
```

<210> 50
<211> 320
<212> PRT
<213> Homo sapiens

<400> 50

Met	Glu	Thr	Asp	Thr	Leu	Leu	Leu	Trp	Val	Leu	Leu	Leu	Trp	Val	Pro
1				5					10					15	

```
Gly Ser Thr Gly Asp Val Arg Arg Gly Pro Arg Ser Leu Arg Gly Arg
            20              25              30

Asp Ala Pro Ala Pro Thr Pro Cys Val Pro Ala Glu Cys Phe Asp Leu
        35              40              45

Leu Val Arg His Cys Val Ala Cys Gly Leu Leu Arg Thr Pro Arg Pro
    50              55              60

Lys Pro Ala Gly Ala Ser Ser Pro Ala Pro Arg Thr Ala Leu Gln Pro
65              70              75              80

Gln Glu Ser Val Gly Ala Gly Ala Gly Glu Ala Ala Val Asp Lys Thr
            85              90              95

His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser
            100             105             110

Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg
            115             120             125

Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro
    130             135             140

Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala
145             150             155             160

Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val
            165             170             175

Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr
            180             185             190

Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr
            195             200             205

Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu
    210             215             220

Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys
225             230             235             240

Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser
            245             250             255
```

Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
        260   265   270

Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser
        275   280   285

Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
    290   295   300

Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
305   310   315   320

<210>   51
<211>   107
<212>   PRT
<213>   Homo sapiens

<400>   51
Asp Ile Gln Met Thr Gln Thr Pro Ser Thr Leu Ser Ala Ser Val Gly
1   5   10   15

Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Asn Asn Tyr
        20   25   30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
        35   40   45

Tyr Tyr Thr Ser Thr Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50   55   60

Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln Pro
65   70   75   80

Asp Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp
            85   90   95

Thr Phe Gly Gln Gly Thr Lys Val Glu Val Lys
            100   105

<210>   52
<211>   107
<212>   PRT
<213>   Mus musculus

<400>   52
Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly
1   5   10   15

Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Asn Asn Tyr
        20   25   30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Ile Val Lys Leu Leu Ile
        35   40   45

Tyr Tyr Thr Ser Thr Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50   55   60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Gln
65   70   75   80

Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp
            85   90   95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
            100   105

<210> 53
<211> 119
<212> PRT
<213> Homo sapiens

<400> 53
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser
1   5   10   15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr
            20   25   30

Leu Ile Glu Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35   40   45

Gly Val Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Asn Glu Lys Phe
    50   55   60

Lys Gly Arg Val Thr Leu Thr Val Asp Glu Ser Thr Asn Thr Ala Tyr
65   70   75   80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Phe Cys
            85   90   95

Ala Arg Arg Asp Gly Asn Tyr Gly Trp Phe Ala Tyr Trp Gly Gln Gly
            100   105   110

Thr Leu Val Thr Val Ser Ser
        115

<210> 54
<211> 119
<212> PRT
<213> Mus musculus

<400> 54
Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Gly Pro Gly Thr
1   5   10   15

Ser Val Arg Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr
            20   25   30

Leu Ile Glu Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
        35   40   45

Gly Val Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Asn Glu Lys Phe
    50   55   60

Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Thr Thr Ala Tyr
65   70   75   80

Met Gln Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Phe Cys
            85   90   95

Ala Arg Arg Asp Gly Asn Tyr Gly Trp Phe Ala Tyr Trp Gly Arg Gly
            100   105   110

Thr Leu Val Thr Val Ser Ala
        115

<210> 55
<211> 214
<212> PRT
<213> Homo sapiens

<400> 55

```
Asp Ile Gln Met Thr Gln Thr Pro Ser Thr Leu Ser Ala Ser Val Gly
1               5                   10                  15

Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Asn Asn Tyr
            20                  25                  30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
        35                  40                  45

Tyr Tyr Thr Ser Thr Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly
    50                  55                  60

Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln Pro
65                  70                  75                  80

Asp Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp
            85                  90                  95

Thr Phe Gly Gln Gly Thr Lys Val Glu Val Lys Arg Thr Val Ala Ala
        100                 105                 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
    115                 120                 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145                 150                 155                 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
            165                 170                 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
            180                 185                 190

Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser
    195                 200                 205

Phe Asn Arg Gly Glu Cys
    210

<210>   56
<211>   448
<212>   PRT
<213>   Homo sapiens

<400>   56
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser
1               5                   10                  15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr
            20                  25                  30

Leu Ile Glu Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile
        35                  40                  45

Gly Val Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Asn Glu Lys Phe
    50                  55                  60

Lys Gly Arg Val Thr Leu Thr Val Asp Glu Ser Thr Asn Thr Ala Tyr
65                  70                  75                  80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Phe Cys
            85                  90                  95
```

```
Ala Arg Arg Asp Gly Asn Tyr Gly Trp Phe Ala Tyr Trp Gly Gln Gly
            100             105             110

Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe
            115             120             125

Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu
    130             135             140

Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp
145             150             155             160

Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu
            165             170             175

Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser
            180             185             190

Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro
    195             200             205

Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp Lys
    210             215             220

Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro
225             230             235             240

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
            245             250             255

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
            260             265             270

Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
            275             280             285

Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val
    290             295             300

Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu
305             310             315             320

Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys
            325             330             335

Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr
            340             345             350

Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr
            355             360             365

Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
    370             375             380

Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu
385             390             395             400

Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
            405             410             415

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
            420             425             430

Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
    435             440             445
```

```
gacgtcgcgg ccgctctagg cctccaaaaa agcctcctca ctacttctgg aatagctcag    60

aggccgaggc ggcctcggcc tctgcataaa taaaaaaat tagtcagcca tgcatggggc   120

ggagaatggg cggaactggg cggagttagg ggcgggatgg gcggagttag gggcgggact   180

atggttgctg actaattgag atgcatgctt tgcatacttc tgcctgctgg ggagcctggg   240

gactttccac acctggttgc tgactaattg agatgcatgc tttgcatact ctgcctgct   300

ggggagcctg gggactttcc acaccctaac tgacacacat tccacagaat taattcccct   360

agttattaat agtaatcaat tacggggtca ttagttcata gcccatatat ggagttccgc   420

gttacataac ttacggtaaa tggcccgcct ggctgaccgc ccaacgaccc ccgcccattg   480

acgtcaataa tgacgtatgt tcccatagta cgccaatag ggactttcca ttgacgtcaa   540

tgggtggact atttacggta aactgcccac ttggcagtac atcaagtgta tcatatgcca   600

agtacgcccc ctattgacgt caatgacggt aaatggcccg cctggcatta tgcccagtac   660

atgaccttat gggactttcc tacttggcag tacatctacg tattagtcat cgctattacc   720

atggtgatgc ggttttggca gtacatcaat gggcgtggat agcggtttga ctcacgggga   780

tttccaagtc tccaccccat tgacgtcaat gggagtttgt tttggcacca aaatcaacgg   840

gactttccaa aatgtcgtaa caactccgcc ccattgacgc aaatgggcgg taggcgtgta   900

cggtgggagg tctatataag cagagctggg tacgtgaacc gtcagatcgc ctggagacgc   960

catcacagat ctctcaccat gagggtcccc gctcagctcc tggggctcct gctgctctgg  1020

ctcccaggtg cacgatgtga tggtaccaag gtggaaatca acgtacggt ggctgcacca  1080

tctgtcttca tcttcccgcc atctgatgag cagttgaaat ctggaactgc ctctgttgtg  1140

tgcctgctga ataacttcta tcccagagag gccaaagtac agtggaaggt ggataacgcc  1200

ctccaatcgg gtaactccca ggagagtgtc acagagcagg acagcaagga cagcacctac  1260

agcctcagca gcaccctgac gctgagcaaa gcagactacg agaaacacaa agtctacgcc  1320

tgcgaagtca cccatcaggg cctgagctcg cccgtcacaa agagcttcaa caggggagag  1380

tgttgaattc agatccgtta acggttacca actacctaga ctggattcgt gacaacatgc  1440

ggccgtgata tctacgtatg atcagcctcg actgtgcctt ctagttgcca gccatctgtt  1500

gtttgcccct cccccgtgcc ttccttgacc ctggaaggtg ccactcccac tgtcctttcc  1560

taataaaatg aggaaattgc atcgcattgt ctgagtaggt gtcattctat tctggggggt  1620

ggggtggggc aggacagcaa gggggaggat tgggaagaca atagcaggca tgctggggat  1680

gcggtgggct ctatggaacc agctgggct cgacagctat gccaagtacg cccctattg  1740

acgtcaatga cggtaaatgg cccgcctggc attatgccca gtacatgacc ttatgggact  1800
```

```
ttcctacttg gcagtacatc tacgtattag tcatcgctat taccatggtg atgcggtttt 1860

ggcagtacat caatgggcgt ggatagcggt ttgactcacg gggatttcca agtctccacc 1920

ccattgacgt caatgggagt ttgttttggc accaaaatca acgggacttt ccaaaatgtc 1980

gtaacaactc cgccccattg acgcaaatgg gcggtaggcg tgtacggtgg gaggtctata 2040

taagcagagc tgggtacgtc ctcacattca gtgatcagca ctgaacacag acccgtcgac 2100

atgggttgga gcctcatctt gctcttcctt gtcgctgttg ctacgcgtgt cgctagcacc 2160

aagggcccat cggtcttccc cctggcaccc tcctccaaga gcacctctgg gggcacagcg 2220

gccctgggct gcctggtcaa ggactacttc cccgaaccgg tgacggtgtc gtggaactca 2280

ggcgccctga ccagcggcgt gcacaccttc ccggctgtcc tacagtcctc aggactctac 2340

tccctcagca gcgtggtgac cgtgccctcc agcagcttgg gcacccagac ctacatctgc 2400

aacgtgaatc acaagcccag caacaccaag gtggacaaga aagcagagcc caaatcttgt 2460

gacaaaactc acacatgccc accgtgccca gcacctgaac tcctgggggg accgtcagtc 2520

ttcctcttcc ccccaaaacc caaggacacc ctcatgatct cccggacccc tgaggtcaca 2580

tgcgtggtgg tggacgtgag ccacgaagac cctgaggtca agttcaactg gtacgtggac 2640

ggcgtggagg tgcataatgc caagacaaag ccgcgggagg agcagtacaa cagcacgtac 2700

cgtgtggtca gcgtcctcac cgtcctgcac caggactggc tgaatggcaa ggactacaag 2760

tgcaaggtct ccaacaaagc cctcccagcc cccatcgaga aaaccatctc caaagccaaa 2820

gggcagcccc gagaaccaca ggtgtacacc ctgcccccat cccgggatga gctgaccagg 2880

aaccaggtca gcctgacctg cctggtcaaa ggcttctatc ccagcgacat cgccgtggag 2940

tgggagagca atgggcagcc ggagaacaac tacaagacca cgcctcccgt gctggactcc 3000

gacggctcct tcttcctcta cagcaagctc accgtggaca agagcaggtg gcagcagggg 3060

aacgtcttct catgctccgt gatgcatgag gctctgcaca accactacac gcagaagagc 3120

ctctccctgt ctccgggtaa atgaggatcc gttaacggtt accaactacc tagactggat 3180

tcgtgacaac atgcggccgt gatatctacg tatgatcagc ctcgactgtg ccttctagtt 3240

gccagccatc tgttgtttgc ccctcccccg tgccttcctt gaccctggaa ggtgccactc 3300

ccactgtcct ttcctaataa aatgaggaaa ttgcatcgca ttgtctgagt aggtgtcatt 3360

ctattctggg gggtggggtg gggcaggaca gcaagggggа ggattgggaa gacaatagca 3420

ggcatgctgg ggatgcggtg ggctctatgg aaccagctgg gctcgacag cgctggatct 3480

cccgatcccc agctttgctt ctcaatttct tatttgcata atgagaaaaa aaggaaaatt 3540

aattttaaca ccaattcagt agttgattga gcaaatgcgt tgccaaaaag gatgctttag 3600

agacagtgtt ctctgcacag ataaggacaa acattattca gagggagtac ccagagctga 3660

gactcctaag ccagtgagtg gcacagcatt ctagggagaa atatgcttgt catcaccgaa 3720

gcctgattcc gtagagccac accttggtaa gggccaatct gctcacacag gatagagagg 3780
```

```
gcaggagcca gggcagagca tataaggtga ggtaggatca gttgctcctc acatttgctt   3840

ctgacatagt tgtgttggga gcttggatag cttggacagc tcagggctgc gatttcgcgc   3900

caaacttgac ggcaatccta gcgtgaaggc tggtaggatt ttatccccgc tgccatcatg   3960

gttcgaccat tgaactgcat cgtcgccgtg tcccaaaata tggggattgg caagaacgga   4020

gacctaccct ggcctccgct caggaacgag ttcaagtact tccaaagaat gaccacaacc   4080

tcttcagtgg aaggtaaaca gaatctggtg attatgggta ggaaaacctg gttctccatt   4140

cctgagaaca atcgaccttt aaaggacaga attaatatag ttctcagtag agaactcaaa   4200

gaaccaccac gaggagctca ttttcttgcc aaaagtttgg atgatgcctt aagacttatt   4260

gaacaaccgg aattggcaag taaagtagac atggtttgga tagtcggagg cagttctgtt   4320

taccaggaag ccatgaatca accaggccac cttagactct ttgtgacaag gatcatgcag   4380

gaatttgaaa gtgacacgtt tttcccagaa attgatttgg ggaaatataa acttctccca   4440

gaatacccag gcgtcctctc tgaggtccag gaggaaaaag gcatcaagta taagtttgaa   4500

gtctacgaga agaaagacta acaggaagat gctttcaagt tctctgctcc cctcctaaag   4560

tcatgcattt ttataagacc atgggacttt tgctggcttt agatcagcct cgactgtgcc   4620

ttctagttgc cagccatctg ttgtttgccc ctcccccgtg ccttccttga ccctggaagg   4680

tgccactccc actgtccttt cctaataaaa tgaggaaatt gcatcgcatt gtctgagtag   4740

gtgtcattct attctggggg gtggggtggg gcaggacagc aagggggagg attgggaaga   4800

caatagcagg catgctgggg atgcggtggg ctctatggaa ccagctgggg ctcgagctac   4860

tagctttgct tctcaatttc ttatttgcat aatgagaaaa aaaggaaaat taattttaac   4920

accaattcag tagttgattg agcaaatgcg ttgccaaaaa ggatgcttta gagacagtgt   4980

tctctgcaca gataaggaca aacattattc agagggagta cccagagctg agactcctaa   5040

gccagtgagt ggcacagcat tctagggaga aatatgcttg tcatcaccga agcctgattc   5100

cgtagagcca caccttggta agggccaatc tgctcacaca ggatagagag ggcaggagcc   5160

agggcagagc atataaggtg aggtaggatc agttgctcct cacatttgct tctgacatag   5220

ttgtgttggg agcttggatc gatcctctat ggttgaacaa gatggattgc acgcaggttc   5280

tccggccgct tgggtggaga ggctattcgg ctatgactgg gcacaacaga caatcggctg   5340

ctctgatgcc gccgtgttcc ggctgtcagc gcagggcgc ccggttcttt ttgtcaagac   5400

cgacctgtcc ggtgccctga atgaactgca ggacgaggca gcgcggctat cgtggctggc   5460

cacgacgggc gttccttgcg cagctgtgct cgacgttgtc actgaagcgg gaagggactg   5520

gctgctattg ggcgaagtgc cggggcagga tctcctgtca tctcaccttg ctcctgccga   5580

gaaagtatcc atcatggctg atgcaatgcg gcggctgcat acgcttgatc cggctacctg   5640

cccattcgac caccaagcga aacatcgcat cgagcgagca cgtactcgga tggaagccgg   5700

tcttgtcgat caggatgatc tggacgaaga gcatcagggg ctcgcgccag ccgaactgtt   5760
```

```
cgccaggctc aaggcgcgca tgcccgacgg cgaggatctc gtcgtgaccc atggcgatgc   5820

ctgcttgccg aatatcatgg tggaaaatgg ccgcttttct ggattcatcg actgtggccg   5880

gctgggtgtg gcggaccgct atcaggacat agcgttggct acccgtgata ttgctgaaga   5940

gcttggcggc gaatgggctg accgcttcct cgtgctttac ggtatcgccg cttcccgatt   6000

cgcagcgcat cgccttctat cgccttcttg acgagttctt ctgagcggga ctctggggtt   6060

cgaaatgacc gaccaagcga cgcccaacct gccatcacga gatttcgatt ccaccgccgc   6120

cttctatgaa aggttgggct tcggaatcgt tttccgggac gccggctgga tgatcctcca   6180

gcgcggggat ctcatgctgg agttcttcgc ccaccccaac ttgtttattg cagcttataa   6240

tggttacaaa taaagcaata gcatcacaaa tttcacaaat aaagcatttt tttcactgca   6300

ttctagttgt ggtttgtcca aactcatcaa tctatcttat catgtctgga tcgcggccgc   6360

gatcccgtcg agagcttggc gtaatcatgg tcatagctgt ttcctgtgtg aaattgttat   6420

ccgctcacaa ttccacacaa catacgagcc ggagcataaa gtgtaaagcc tggggtgcct   6480

aatgagtgag ctaactcaca ttaattgcgt tgcgctcact gcccgctttc cagtcgggaa   6540

acctgtcgtg ccagctgcat taatgaatcg gccaacgcgc ggggagaggc ggtttgcgta   6600

ttgggcgctc ttccgcttcc tcgctcactg actcgctgcg ctcggtcgtt cggctgcggc   6660

gagcggtatc agctcactca aaggcggtaa tacggttatc cacagaatca ggggataacg   6720

caggaaagaa catgtgagca aaaggccagc aaaaggccag gaaccgtaaa aaggccgcgt   6780

tgctggcgtt tttccatagg ctccgccccc ctgacgagca tcacaaaaat cgacgctcaa   6840

gtcagaggtg gcgaaacccg acaggactat aaagatacca ggcgtttccc cctggaagct   6900

ccctcgtgcg ctctcctgtt ccgaccctgc cgcttaccgg atacctgtcc gcctttctcc   6960

cttcgggaag cgtggcgctt tctcaatgct cacgctgtag gtatctcagt tcggtgtagg   7020

tcgttcgctc caagctgggc tgtgtgcacg aaccccccgt tcagcccgac cgctgcgcct   7080

tatccggtaa ctatcgtctt gagtccaacc cggtaagaca cgacttatcg ccactggcag   7140

cagccactgg taacaggatt agcagagcga ggtatgtagg cggtgctaca gagttcttga   7200

agtggtggcc taactacggc tacactagaa ggacagtatt tggtatctgc gctctgctga   7260

agccagttac cttcggaaaa agagttggta gctcttgatc cggcaaacaa accaccgctg   7320

gtagcggtgg tttttttgtt tgcaagcagc agattacgcg cagaaaaaaa ggatctcaag   7380

aagatccttt gatcttttct acggggtctg acgctcagtg aacgaaaac tcacgttaag   7440

ggattttggt catgagatta tcaaaaagga tcttaccta gatccttta aattaaaaat   7500

gaagttttaa atcaatctaa agtatatatg agtaaacttg gtctgacagt taccaatgct   7560

taatcagtga ggcacctatc tcagcgatct gtctatttcg ttcatccata gttgcctgac   7620

tccccgtcgt gtagataact acgatacggg agggcttacc atctggcccc agtgctgcaa   7680

tgataccgcg agacccacgc tcaccggctc cagatttatc agcaataaac cagccagccg   7740
```

```
gaagggccga gcgcagaagt ggtcctgcaa ctttatccgc ctccatccag tctattaatt   7800

gttgccggga agctagagta agtagttcgc cagttaatag tttgcgcaac gttgttgcca   7860

ttgctacagg catcgtggtg tcacgctcgt cgtttggtat ggcttcattc agctccggtt   7920

cccaacgatc aaggcgagtt acatgatccc ccatgttgtg caaaaaagcg gttagctcct   7980

tcggtcctcc gatcgttgtc agaagtaagt tggccgcagt gttatcactc atggttatgg   8040

cagcactgca taattctctt actgtcatgc catccgtaag atgcttttct gtgactggtg   8100

agtactcaac caagtcattc tgagaatagt gtatgcggcg accgagttgc tcttgcccgg   8160

cgtcaatacg ggataatacc gcgccacata gcagaacttt aaaagtgctc atcattggaa   8220

aacgttcttc ggggcgaaaa ctctcaagga tcttaccgct gttgagatcc agttcgatgt   8280

aacccactcg tgcacccaac tgatcttcag catcttttac tttcaccagc gtttctgggt   8340

gagcaaaaac aggaaggcaa aatgccgcaa aaaagggaat aagggcgaca cggaaatgtt   8400

gaatactcat actcttcctt tttcaatatt attgaagcat ttatcaggt tattgtctca   8460

tgagcggata catatttgaa tgtatttaga aaaataaaca ataggggtt ccgcgcacat   8520

ttccccgaaa agtgccacct                                                 8540
```

<210> 58
<211> 9209
<212> DNA
<213> Mus musculus

<400> 58
```
gacgtcgcgg ccgctctagg cctccaaaaa agcctcctca ctacttctgg aatagctcag    60

aggccgaggc ggcctcggcc tctgcataaa taaaaaaaat tagtcagcca tgcatggggc   120

ggagaatggg cggaactggg cggagttagg ggcgggatgg gcggagttag gggcgggact   180

atggttgctg actaattgag atgcatgctt tgcatacttc tgcctgctgg ggagcctggg   240

gactttccac acctggttgc tgactaattg agatgcatgc tttgcatact tctgcctgct   300

ggggagcctg gggactttcc acaccctaac tgacacacat tccacagaat taattcccct   360

agttattaat agtaatcaat tacggggtca ttagttcata gcccatatat ggagttccgc   420

gttacataac ttacggtaaa tggcccgcct ggctgaccgc ccaacgaccc cgcccattg   480

acgtcaataa tgacgtatgt tcccatagta acgccaatag ggactttcca ttgacgtcaa   540

tgggtggact atttacggta aactgcccac ttggcagtac atcaagtgta tcatatgcca   600

agtacgcccc ctattgacgt caatgacggt aaatggcccg cctggcatta tgcccagtac   660

atgaccttat gggactttcc tacttggcag tacatctacg tattagtcat cgctattacc   720

atggtgatgc ggttttggca gtacatcaat gggcgtggat accggtttga ctcacgcgga   780

tttccaagtc tccaccccat tgacgtcaat gggagtttgt tttggcacca aaatcaacgg   840

gactttccaa aatgtcgtaa caactccgcc ccattgacgc aaatgggcgg taggcgtgta   900

cggtgggagg tctatataag cagagctggg tacgtgaacc gtcagatcgc ctggagacgc   960
```

```
catcacagat ctctcactat ggattttcag gtgcagatta tcagcttcct gctaatcagt   1020

gcttcagtca taatgtccag aggacaaatt gttctctccc agtctccagc aatcctgtct   1080

gcatctccag gggagaaggt cacaatgact tgcagggcca gctcaagtgt aagttacatc   1140

cactggttcc agcagaagcc aggatcctcc cccaacccct ggatttatgc cacatccaac   1200

ctggcttctg gagtccctgt tcgcttcagt ggcagtgggt ctgggacttc ttactctctc   1260

acaatcagca gagtggaggc tgaagatgct gccacttatt actgccagca gtggactagt   1320

aacccaccca cgttcggagg ggggaccaag ctggaaatca aacgtacggt ggctgcacca   1380

tctgtcttca tcttcccgcc atctgatgag cagttgaaat ctggaactgc ctctgttgtg   1440

tgcctgctga ataacttcta tcccagagag gccaaagtac agtggaaggt ggataacgcc   1500

ctccaatcgg gtaactccca ggagagtgtc acagagcagg acagcaagga cagcacctac   1560

agcctcagca gcaccctgac gctgagcaaa gcagactacg agaaacacaa agtctacgcc   1620

tgcgaagtca cccatcaggg cctgagctcg cccgtcacaa agagcttcaa caggggagag   1680

tgttgaattc agatccgtta acggttacca actacctaga ctggattcgt gacaacatgc   1740

ggccgtgata tctacgtatg atcagcctcg actgtgcctt ctagttgcca gccatctgtt   1800

gtttgcccct cccccgtgcc ttccttgacc ctggaaggtg ccactcccac tgtcctttcc   1860

taataaaatg aggaaattgc atcgcattgt ctgagtaggt gtcattctat tctggggggt   1920

ggggtggggc aggacagcaa gggggaggat tgggaagaca atagcaggca tgctggggat   1980

gcggtgggct ctatggaacc agctggggct cgacagctat gccaagtacg ccccctattg   2040

acgtcaatga cggtaaatgg cccgcctggc attatgccca gtacatgacc ttatgggact   2100

ttcctacttg gcagtacatc tacgtattag tcatcgctat taccatggtg atgcggtttt   2160

ggcagtacat caatgggcgt ggatagcggt ttgactcacg gggatttcca agtctccacc   2220

ccattgacgt caatgggagt ttgttttggc accaaaatca acgggacttt ccaaaatgtc   2280

gtaacaactc cgccccattg acgcaaatgg gcggtaggcg tgtacggtgg gaggtctata   2340

taagcagagc tgggtacgtc ctcacattca gtgatcagca ctgaacacag acccgtcgac   2400

atgggttgga gcctcatctt gctcttcctt gtcgctgttg ctacgcgtgt cctgtcccag   2460

gtacaactgc agcagcctgg ggctgagctg gtgaagcctg gggcctcagt gaagatgtcc   2520

tgcaaggctt ctggctacac atttaccagt tacaatatgc actgggtaaa acagacacct   2580

ggtcggggcc tggaatggat tggagctatt tatcccggaa atggtgatac ttcctacaat   2640

cagaagttca aaggcaaggc cacattgact gcagacaaat cctccagcac agcctacatg   2700

cagctcagca gcctgacatc tgaggactct gcggtctatt actgtgcaag atcgacttac   2760

tacggcggtg actggtactt caatgtctgg ggcgcaggga ccacggtcac cgtctctgca   2820

gctagcacca agggcccatc ggtcttcccc ctggcaccct cctccaagag cacctctggg   2880

ggcacagcgg ccctgggctg cctggtcaag gactacttcc ccgaaccggt gacggtgtcg   2940
```

```
tggaactcag gcgccctgac cagcggcgtg cacaccttcc cggctgtcct acagtcctca  3000

ggactctact ccctcagcag cgtggtgacc gtgccctcca gcagcttggg cacccagacc  3060

tacatctgca acgtgaatca caagcccagc aacaccaagg tggacaagaa agcagagccc  3120

aaatcttgtg acaaaactca cacatgccca ccgtgcccag cacctgaact cctgggggga  3180

ccgtcagtct tcctcttccc cccaaaaccc aaggacaccc tcatgatctc ccggacccct  3240

gaggtcacat gcgtggtggt ggacgtgagc cacgaagacc ctgaggtcaa gttcaactgg  3300

tacgtggacg gcgtggaggt gcataatgcc aagacaaagc cgcgggagga gcagtacaac  3360

agcacgtacc gtgtggtcag cgtcctcacc gtcctgcacc aggactggct gaatggcaag  3420

gagtacaagt gcaaggtctc caacaaagcc ctcccagccc ccatcgagaa aaccatctcc  3480

aaagccaaag ggcagccccg agaaccacag gtgtacaccc tgcccccatc ccgggatgag  3540

ctgaccaaga accaggtcag cctgacctgc ctggtcaaag gcttctatcc cagcgacatc  3600

gccgtggagt gggagagcaa tgggcagccg gagaacaact acaagaccac gcctcccgtg  3660

ctggactccg acggctcctt cttcctctac agcaagctca ccgtggacaa gagcaggtgg  3720

cagcagggga acgtcttctc atgctccgtg atgcatgagg ctctgcacaa ccactacacg  3780

cagaagagcc tctccctgtc tccgggtaaa tgaggatccg ttaacggtta ccaactacct  3840

agactggatt cgtgacaaca tgcggccgtg atatctacgt atgatcagcc tcgactgtgc  3900

cttctagttg ccagccatct gttgtttgcc cctcccccgt gccttccttg accctggaag  3960

gtgccactcc cactgtcctt tcctaataaa atgaggaaat tgcatcgcat tgtctgagta  4020

ggtgtcattc tattctgggg ggtggggtgg ggcaggacag caagggggag gattgggaag  4080

acaatagcag gcatgctggg gatgcggtgg gctctatgga accagctggg gctcgacagc  4140

gctggatctc ccgatcccca gctttgcttc tcaatttctt atttgcataa tgagaaaaaa  4200

aggaaaatta attttaacac caattcagta gttgattgag caaatgcgtt gccaaaaagg  4260

atgctttaga gacagtgttc tctgcacaga taaggacaaa cattattcag agggagtacc  4320

cagagctgag actcctaagc cagtgagtgg cacagcattc tagggagaaa tatgcttgtc  4380

atcaccgaag cctgattccg tagagccaca ccttggtaag ggccaatctg ctcacacagg  4440

atagagaggg caggagccag ggcagagcat ataaggtgag gtaggatcag ttgctcctca  4500

catttgcttc tgacatagtt gtgttgggag cttggatagc ttggacagct cagggctgcg  4560

atttcgcgcc aaacttgacg gcaatcctag cgtgaaggct ggtaggattt tatccccgct  4620

gccatcatgg ttcgaccatt gaactgcatc gtcgccgtgt cccaaaatat ggggattggc  4680

aagaacggag acctaccctg gcctccgctc aggaacgagt tcaagtactt ccaaagaatg  4740

accacaacct cttcagtgga aggtaaacag aatctggtga ttatgggtag gaaaacctgg  4800

ttctccattc ctgagaagaa tcgacctttc aaggacagaa ttaatatagt tctcagtaga  4860

gaactcaaag aaccaccacg aggagctcat tttcttgcca aaagtttgga tgatgcctta  4920
```

```
agacttattg aacaaccgga attggcaagt aaagtagaca tggtttggat agtcggaggc 4980

agttctgttt accaggaagc catgaatcaa ccaggccacc ttagactctt tgtgacaagg 5040

atcatgcagg aatttgaaag tgacacgttt ttcccagaaa ttgatttggg gaaatataaa 5100

cttctcccag aatacccagg cgtcctctct gaggtccagg aggaaaaagg catcaagtat 5160

aagtttgaag tctacgagaa gaaagactaa caggaagatg ctttcaagtt ctctgctccc 5220

ctcctaaagc tatgcatttt tataagacca tgggactttt gctggcttta gatcagcctc 5280

gactgtgcct tctagttgcc agccatctgt tgtttgcccc tcccccgtgc cttccttgac 5340

cctggaaggt gccactccca ctgtcctttc ctaataaaat gaggaaattg catcgcattg 5400

tctgagtagg tgtcattcta ttctgggggg tggggtgggg caggacagca agggggagga 5460

ttgggaagac aatagcaggc atgctgggga tgcggtgggc tctatggaac cagctggggc 5520

tcgagctact agctttgctt ctcaatttct tatttgcata atgagaaaaa aaggaaaatt 5580

aattttaaca ccaattcagt agttgattga gcaaatgcgt tgccaaaaag gatgctttag 5640

agacagtgtt ctctgcacag ataaggacaa acattattca gagggagtac ccagagctga 5700

gactcctaag ccagtgagtg gcacagcatt ctagggagaa atatgcttgt catcaccgaa 5760

gcctgattcc gtagagccac accttggtaa gggccaatct gctcacacag gatagagagg 5820

gcaggagcca gggcagagca tataaggtga ggtaggatca gttgctcctc acatttgctt 5880

ctgacatagt tgtgttggga gcttggatcg atcctctatg gttgaacaag atggattgca 5940

cgcaggttct ccggccgctt gggtggagag gctattcggc tatgactggg cacaacagac 6000

aatcggctgc tctgatgccg ccgtgttccg gctgtcagcg caggggcgcc cggttctttt 6060

tgtcaagacc gacctgtccg gtgccctgaa tgaactgcag gacgaggcag cgcggctatc 6120

gtggctggcc acgacgggcg ttccttgcgc agctgtgctc gacgttgtca ctgaagcggg 6180

aagggactgg ctgctattgg gcgaagtgcc ggggcaggat ctcctgtcat ctcaccttgc 6240

tcctgccgag aaagtatcca tcatggctga tgcaatgcgg cggctgcata cgcttgatcc 6300

ggctacctgc ccattcgacc accaagcgaa acatcgcatc gagcgagcac gtactcggat 6360

ggaagccggt cttgtcgatc aggatgatct ggacgaagag catcaggggc tcgcgccagc 6420

cgaactgttc gccaggctca aggcgcgcat gcccgacggc gaggatctcg tcgtgaccca 6480

tggcgatgcc tgcttgccga atatcatggt ggaaaatggc cgcttttctg gattcatcga 6540

ctgtggccgg ctgggtgtgg cggaccgcta tcaggacata gcgttggcta cccgtgatat 6600

tgctgaagag cttggcggcg aatgggctga ccgcttcctc gtgctttacg gtatcgccgc 6660

tcccgattcg cagcgcatcg ccttctatcg ccttcttgac gagttcttct gagcgggact 6720

ctggggttcg aaatgaccga ccaagcgacg cccaacctgc catcacgaga tttcgattcc 6780

accgccgcct tctatgaaag gttgggcttc ggaatcgttt tccgggacgc cggctggatg 6840

atcctccagc gcggggatct catgctggag ttcttcgccc accccaactt gtttattgca 6900
```

```
gcttataatg gttacaaata aagcaatagc atcacaaatt tcacaaataa agcatttttt    6960

tcactgcatt ctagttgtgg tttgtccaaa ctcatcaatc tatcttatca tgtctggatc    7020

gcggccgcga tcccgtcgag agcttggcgt aatcatggtc atagctgttt cctgtgtgaa    7080

attgttatcc gctcacaatt ccacacaaca tacgagccgg aagcataaag tgtaaagcct    7140

ggggtgccta atgagtgagc taactcacat taattgcgtt gcgctcactg cccgctttcc    7200

agtcgggaaa cctgtcgtgc cagctgcatt aatgaatcgg ccaacgcgcg gggagaggcg    7260

gtttgcgtat tgggcgctct tccgcttcct cgctcactga ctcgctgcgc tcggtcgttc    7320

ggctgcggcg agcggtatca gctcactcaa aggcggtaat acggttatcc acagaatcag    7380

gggataacgc aggaaagaac atgtgagcaa aaggccagca aaaggccagg aaccgtaaaa    7440

aggccgcgtt gctggcgttt ttccataggc tccgcccccc tgacgagcat cacaaaaatc    7500

gacgctcaag tcagaggtgg cgaaacccga caggactata aagataccag gcgtttcccc    7560

ctggaagctc cctcgtgcgc tctcctgttc cgaccctgcc gcttaccgga tacctgtccg    7620

cctttctccc ttcgggaagc gtggcgcttt ctcaatgctc acgctgtagg tatctcagtt    7680

cggtgtaggt cgttcgctcc aagctgggct gtgtgcacga accccccgtt cagcccgacc    7740

gctgcgcctt atccggtaac tatcgtcttg agtccaaccc ggtaagacac gacttatcgc    7800

cactggcagc agccactggt aacaggatta gcagagcgag gtatgtaggc ggtgctacag    7860

agttcttgaa gtggtggcct aactacggct acactagaag gacagtattt ggtatctgcg    7920

ctctgctgaa gccagttacc ttcggaaaaa gagttggtag ctcttgatcc ggcaaacaaa    7980

ccaccgctgg tagcggtggt ttttttgttt gcaagcagca gattacgcgc agaaaaaaag    8040

gatctcaaga agatcctttg atcttttcta cggggtctga cgctcagtgg aacgaaaact    8100

cacgttaagg gattttggtc atgagattat caaaaaggat cttcacctag atccttttaa    8160

attaaaaatg aagttttaaa tcaatctaaa gtatatatga gtaaacttgg tctgacagtt    8220

accaatgctt aatcagtgag gcacctatct cagcgatctg tctatttcgt tcatccatag    8280

ttgcctgact ccccgtcgtg tagataacta cgatacggga gggcttacca tctggcccca    8340

gtgctgcaat gataccgcga gacccacgct caccggctcc agatttatca gcaataaacc    8400

agccagccgg aagggccgag cgcagaagtg gtcctgcaac tttatccgcc tccatccagt    8460

ctattaattg ttgccgggaa gctagagtaa gtagttcgcc agttaatagt ttgcgcaacg    8520

ttgttgccat tgctacaggc atcgtggtgt cacgctcgtc gtttggtatg gcttcattca    8580

gctccggttc ccaacgatca aggcgagtta catgatcccc catgttgtgc aaaaaagcgg    8640

ttagctcctt cggtcctccg atcgttgtca gaagtaagtt ggccgcagtg ttatcactca    8700

tggttatggc agcactgcat aattctctta ctgtcatgcc atccgtaaga tgcttttctg    8760

tgactggtga gtactcaacc aagtcattct gagaatagtg tatgcggcga ccgagttgct    8820

cttgcccggc gtcaatacgg gataataccg cgccacatag cagaactttа aaagtgctca    8880
```

```
tcattggaaa acgttcttcg gggcgaaaac tctcaaggat cttaccgctg ttgagatcca  8940

gttcgatgta acccactcgt gcacccaact gatcttcagc atcttttact ttcaccagcg  9000

tttctgggtg agcaaaaaca ggaaggcaaa atgccgcaaa aaagggaata agggcgacac  9060

ggaaatgttg aatactcata ctcttccttt ttcaatatta ttgaagcatt tatcagggtt  9120

attgtctcat gagcggatac atatttgaat gtatttagaa aaataaacaa atagggttc  9180

cgcgcacatt tccccgaaaa gtgccacct                                    9209
```

<210> 59
<211> 384
<212> DNA
<213> Mus musculus

<400> 59
```
atggattttc aggtgcagat tatcagcttc ctgctaatca gtgcttcagt cataatgtcc   60

agagggcaaa ttgttctctc ccagtctcca gcaatcctgt ctgcatctcc aggggagaag  120

gtcacaatga cttgcagggc cagctcaagt gtaagttaca tccactggtt ccagcagaag  180

ccaggatcct cccccaaacc ctggatttat gccacatcca acctggcttc tggagtccct  240

gttcgcttca gtggcagtgg gtctgggact tcttactctc tcacaatcag cagagtggag  300

gctgaagatg ctgccactta ttactgccag cagtggacta gtaacccacc cacgttcgga  360

gggggaccaa gctggaaat caaa                                           384
```

<210> 60
<211> 128
<212> PRT
<213> Mus musculus

<400> 60
```
Met Asp Phe Gln Val Gln Ile Ile Ser Phe Leu Leu Ile Ser Ala Ser
1               5                   10                  15

Val Ile Met Ser Arg Gly Gln Ile Val Leu Ser Gln Ser Pro Ala Ile
            20                  25                  30

Leu Ser Ala Ser Pro Gly Glu Lys Val Thr Met Thr Cys Arg Ala Ser
        35                  40                  45

Ser Ser Val Ser Tyr Ile His Trp Phe Gln Gln Lys Pro Gly Ser Ser
    50                  55                  60

Pro Lys Pro Trp Ile Tyr Ala Thr Ser Asn Leu Ala Ser Gly Val Pro
65                  70                  75                  80

Val Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile
                85                  90                  95

Ser Arg Val Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp
            100                 105                 110

Thr Ser Asn Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
        115                 120                 125
```

<210> 61
<211> 420
<212> DNA
```

<213> Mus musculus

<400> 61
atgggttgga gcctcatctt gctcttcctt gtcgctgttg ctacgcgtgt cctgtcccag        60

gtacaactgc agcagcctgg ggctgagctg gtgaagcctg gggcctcagt gaagatgtcc       120

tgcaaggctt ctggctacac atttaccagt tacaatatgc actgggtaaa acagacacct       180

ggtcggggcc tggaatggat tggagctatt tatcccggaa atggtgatac ttcctacaat       240

cagaagttca aaggcaaggc cacattgact gcagacaaat cctccagcac agcctacatg       300

cagctcagca gcctgacatc tgaggactct gcggtctatt actgtgcaag atcgacttac       360

tacggcggtg actggtactt caatgtctgg ggcgcaggga ccacggtcac cgtctctgca       420

<210> 62
<211> 140
<212> PRT
<213> Mus musculus

<400> 62

```
Met Gly Trp Ser Leu Ile Leu Leu Phe Leu Val Ala Val Ala Thr Arg
1               5                   10                  15

Val Leu Ser Gln Val Gln Leu Gln Gln Pro Gly Ala Glu Leu Val Lys
            20                  25                  30

Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe
        35                  40                  45

Thr Ser Tyr Asn Met His Trp Val Lys Gln Thr Pro Gly Arg Gly Leu
    50                  55                  60

Glu Trp Ile Gly Ala Ile Tyr Pro Gly Asn Gly Asp Thr Ser Tyr Asn
65                  70                  75                  80

Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser
                85                  90                  95

Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val
            100                 105                 110

Tyr Tyr Cys Ala Arg Ser Thr Tyr Tyr Gly Gly Asp Trp Tyr Phe Asn
        115                 120                 125

Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ala
    130                 135                 140
```

<210> 63
<211> 1395
<212> DNA
<213> Homo sapiens

<400> 63
atgtattcca atgtgatagg aactgtaacc tctggaaaaa ggaaggttta tcttttgtcc   60

ttgctgctca ttggcttctg ggactgcgtg acctgtcacg ggagccctgt ggacatctgc   120

acagccaagc cgcgggacat tcccatgaat cccatgtgca tttaccgctc cccggagaag   180

aaggcaactg aggatgaggg ctcagaacag aagatcccgg aggccaccaa ccggcgtgtc   240

tgggaactgt ccaaggccaa ttcccgcttt gctaccactt ctatcagca cctggcagat   300

```
tccaagaatg acaatgataa cattttcctg tcacccctga gtatctccac ggctttgct     360

atgaccaagc tgggtgcctg taatgacacc ctccagcaac tgatggaggt atttaagttt     420

gacaccatat ctgagaaaac atctgatcag atccacttct tctttgccaa actgaactgc     480

cgactctatc gaaaagccaa caatcctcc aagttagtat cagccaatcg ccttttttgga     540

gacaaatccc ttaccttcaa tgagacctac caggacatca gtgagttggt atatggagcc     600

aagctccagc ccctggactt caaggaaaat gcagagcaat ccagagcggc catcaacaaa     660

tgggtgtcca ataagaccga aggccgaatc accgatgtca ttccctcgga agccatcaat     720

gagctcactg ttctggtgct ggttaacacc atttacttca agggcctgtg gaagtcaaag     780

ttcagccctg agaacacaag gaaggaactg ttctacaagg ctgatggaga gtcgtgttca     840

gcatctatga tgtaccagga aggcaagttc cgttatcggc gcgtggctga aggcacccag     900

gtgcttgagt tgcccttcaa aggtgatgac atcaccatgg tcctcatctt gcccaagcct     960

gagaagagcc tggccaaggt ggagaaggaa ctcaccccag aggtgctgca ggagtggctg    1020

gatgaattgg aggagatgat gctggtggtc cacatgcccc gcttccgcat tgaggacggc    1080

ttcagtttga aggagcagct gcaagacatg ggccttgtcg atctgttcag ccctgaaaag    1140

tccaaactcc caggtattgt tgcagaaggc cgagatgacc tctatgtctc agatgcattc    1200

cataaggcat ttcttgaggt aaatgaagaa ggcagtgaag cagctgcaag taccgctgtt    1260

gtgattgctg ccgttcgct aaacccccaac agggtgactt tcaaggccaa caggcctttc    1320

ctggtttttta taagagaagt tcctctgaac actattatct tcatgggcag agtagccaac    1380

ccttgtgtta agtaa                                                      1395
```

<210>   64
<211>   464
<212>   PRT
<213>   Homo sapiens

<400>   64
Met Tyr Ser Asn Val Ile Gly Thr Val Thr Ser Gly Lys Arg Lys Val
1   5   10   15

Tyr Leu Leu Ser Leu Leu Leu Ile Gly Phe Trp Asp Cys Val Thr Cys
            20   25   30

His Gly Ser Pro Val Asp Ile Cys Thr Ala Lys Pro Arg Asp Ile Pro
        35   40   45

Met Asn Pro Met Cys Ile Tyr Arg Ser Pro Glu Lys Lys Ala Thr Glu
    50   55   60

Asp Glu Gly Ser Glu Gln Lys Ile Pro Glu Ala Thr Asn Arg Arg Val
65   70   75   80

Trp Glu Leu Ser Lys Ala Asn Ser Arg Phe Ala Thr Thr Phe Tyr Gln
                85   90   95

His Leu Ala Asp Ser Lys Asn Asp Asn Asp Asn Ile Phe Leu Ser Pro
                100   105   110

Leu Ser Ile Ser Thr Ala Phe Ala Met Thr Lys Leu Gly Ala Cys Asn
```

```
                    115                      120                      125

Asp Thr Leu Gln Gln Leu Met Glu Val Phe Lys Phe Asp Thr Ile Ser
        130                      135                      140

Glu Lys Thr Ser Asp Gln Ile His Phe Phe Phe Ala Lys Leu Asn Cys
145                      150                      155                      160

Arg Leu Tyr Arg Lys Ala Asn Lys Ser Ser Lys Leu Val Ser Ala Asn
                165                      170                      175

Arg Leu Phe Gly Asp Lys Ser Leu Thr Phe Asn Glu Thr Tyr Gln Asp
            180                      185                      190

Ile Ser Glu Leu Val Tyr Gly Ala Lys Leu Gln Pro Leu Asp Phe Lys
            195                      200                      205

Glu Asn Ala Glu Gln Ser Arg Ala Ala Ile Asn Lys Trp Val Ser Asn
    210                      215                      220

Lys Thr Glu Gly Arg Ile Thr Asp Val Ile Pro Ser Glu Ala Ile Asn
225                      230                      235                      240

Glu Leu Thr Val Leu Val Leu Val Asn Thr Ile Tyr Phe Lys Gly Leu
                245                      250                      255

Trp Lys Ser Lys Phe Ser Pro Glu Asn Thr Arg Lys Glu Leu Phe Tyr
            260                      265                      270

Lys Ala Asp Gly Glu Ser Cys Ser Ala Ser Met Met Tyr Gln Glu Gly
            275                      280                      285

Lys Phe Arg Tyr Arg Arg Val Ala Glu Gly Thr Gln Val Leu Glu Leu
    290                      295                      300

Pro Phe Lys Gly Asp Asp Ile Thr Met Val Leu Ile Leu Pro Lys Pro
305                      310                      315                      320

Glu Lys Ser Leu Ala Lys Val Glu Lys Glu Leu Thr Pro Glu Val Leu
                325                      330                      335

Gln Glu Trp Leu Asp Glu Leu Glu Glu Met Met Leu Val Val His Met
            340                      345                      350

Pro Arg Phe Arg Ile Glu Asp Gly Phe Ser Leu Lys Glu Gln Leu Gln
            355                      360                      365

Asp Met Gly Leu Val Asp Leu Phe Ser Pro Glu Lys Ser Lys Leu Pro
    370                      375                      380

Gly Ile Val Ala Glu Gly Arg Asp Asp Leu Tyr Val Ser Asp Ala Phe
385                      390                      395                      400

His Lys Ala Phe Leu Glu Val Asn Glu Glu Gly Ser Glu Ala Ala Ala
                405                      410                      415

Ser Thr Ala Val Val Ile Ala Gly Arg Ser Leu Asn Pro Asn Arg Val
            420                      425                      430

Thr Phe Lys Ala Asn Arg Pro Phe Leu Val Phe Ile Arg Glu Val Pro
        435                      440                      445

Leu Asn Thr Ile Ile Phe Met Gly Arg Val Ala Asn Pro Cys Val Lys
    450                      455                      460

<210>   65
```

<211> 1962
<212> DNA
<213> Homo sapiens

<400> 65
atgcgtcccc tgcgcccccg cgccgcgctg ctggcgctcc tggcctcgct cctggccgcg   60

cccccggtgg ccccggccga ggccccgcac ctggtgcagg tggacgcggc ccgcgcgctg   120

tggcccctgc ggcgcttctg gaggagcaca ggcttctgcc ccccgctgcc acacagccag   180

gctgaccagt acgtcctcag ctgggaccag cagctcaacc tcgcctatgt gggcgccgtc   240

cctcaccgcg gcatcaagca ggtccggacc cactggctgc tggagcttgt caccaccagg   300

gggtccactg gacggggcct gagctacaac ttcacccacc tggacgggta cttggacctt   360

ctcagggaga accagctcct cccagggttt gagctgatgg cagcgcctc gggccacttc   420

actgactttg aggacaagca gcaggtgttt gagtggaagg acttggtctc cagcctggcc   480

aggagataca tcggtaggta cggactggcg catgtttcca gtggaactt cgagacgtgg   540

aatgagccag accaccacga ctttgacaac gtctccatga ccatgcaagg cttcctgaac   600

tactacgatg cctgctcgga gggtctgcgc gccgccagcc ccgccctgcg gctgggaggc   660

cccggcgact ccttccacac cccaccgcga tccccgctga gctggggcct cctgcgccac   720

tgccacgacg gtaccaactt cttcactggg gaggcgggcg tgcggctgga ctacatctcc   780

ctccacagga agggtgcgcg cagctccatc tccatcctgg agcaggagaa ggtcgtcgcg   840

cagcagatcc ggcagctctt ccccaagttc gcggacaccc ccatttacaa cgacgaggcg   900

gacccgctgg tgggctggtc cctgccacag ccgtggaggg cggacgtgac ctacgcggcc   960

atggtggtga ggtcatcgc gcagcatcag aacctgctac tggccaacac cacctccgcc   1020

ttcccctacg cgctcctgag caacgacaat gccttcctga gctaccaccc gcaccccttc   1080

gcgcagcgca cgctcaccgc gcgcttccag gtcaacaaca cccgcccgcc gcacgtgcag   1140

ctgttgcgca agccggtgct cacggccatg gggctgctgg cgctgctgga tgaggagcag   1200

ctctgggccg aagtgtcgca ggccgggacc gtcctggaca gcaaccacac ggtgggcgtc   1260

ctggccagcg cccaccgccc ccagggcccg gccgacgcct ggcgcgccgc ggtgctgatc   1320

tacgcgagcg acgacacccg cgcccacccc aaccgcagcg tcgcggtgac cctgcggctg   1380

cgcggggtgc cccccggccc gggcctggtc tacgtcacgc gctacctgga caacgggctc   1440

tgcagccccg acggcgagtg gcggcgcctg gccggcccg tcttccccac ggcagagcag   1500

ttccggcgca tgcgcgcggc tgaggacccg gtggccgcgg cgccccgccc cttacccgcc   1560

ggcggccgcc tgaccctgcg ccccgcgctg cggctgccgt cgcttttgct ggtgcacgtg   1620

tgtgcgcgcc ccgagaagcc gcccgggcag gtcacgcggc tccgcgccct gcccctgacc   1680

caagggcagc tggttctggt ctggtcggat gaacacgtgg gctccaagtg cctgtggaca   1740

tacgagatcc agttctctca ggacggtaag gcgtacaccc cggtcagcag gaagccatcg   1800

accttcaacc tctttgtgtt cagcccagac acaggtgctg tctctggctc ctaccgagtt   1860

cgagccctgg actactgggc ccgaccaggc cccttctcgg accctgtgcc gtacctggag   1920

gtccctgtgc caagagggcc cccatccccg ggcaatccat ga   1962

<210> 66
<211> 653
<212> PRT
<213> Homo sapiens

<400> 66
Met Arg Pro Leu Arg Pro Arg Ala Ala Leu Leu Ala Leu Leu Ala Ser
1   5   10   15

Leu Leu Ala Ala Pro Pro Val Ala Pro Ala Glu Ala Pro His Leu Val
            20   25   30

Gln Val Asp Ala Ala Arg Ala Leu Trp Pro Leu Arg Arg Phe Trp Arg
        35   40   45

Ser Thr Gly Phe Cys Pro Pro Leu Pro His Ser Gln Ala Asp Gln Tyr
    50   55   60

Val Leu Ser Trp Asp Gln Gln Leu Asn Leu Ala Tyr Val Gly Ala Val
65   70   75   80

Pro His Arg Gly Ile Lys Gln Val Arg Thr His Trp Leu Leu Glu Leu
                85   90   95

Val Thr Thr Arg Gly Ser Thr Gly Arg Gly Leu Ser Tyr Asn Phe Thr
            100   105   110

His Leu Asp Gly Tyr Leu Asp Leu Leu Arg Glu Asn Gln Leu Leu Pro
        115   120   125

Gly Phe Glu Leu Met Gly Ser Ala Ser Gly His Phe Thr Asp Phe Glu
    130   135   140

Asp Lys Gln Gln Val Phe Glu Trp Lys Asp Leu Val Ser Ser Leu Ala
145   150   155   160

Arg Arg Tyr Ile Gly Arg Tyr Gly Leu Ala His Val Ser Lys Trp Asn
                165   170   175

Phe Glu Thr Trp Asn Glu Pro Asp His His Asp Phe Asp Asn Val Ser
            180   185   190

Met Thr Met Gln Gly Phe Leu Asn Tyr Tyr Asp Ala Cys Ser Glu Gly
        195   200   205

Leu Arg Ala Ala Ser Pro Ala Leu Arg Leu Gly Gly Pro Gly Asp Ser
    210   215   220

Phe His Thr Pro Pro Arg Ser Pro Leu Ser Trp Gly Leu Leu Arg His
225   230   235   240

Cys His Asp Gly Thr Asn Phe Phe Thr Gly Glu Ala Gly Val Arg Leu
                245   250   255

Asp Tyr Ile Ser Leu His Arg Lys Gly Ala Arg Ser Ser Ile Ser Ile
            260   265   270

Leu Glu Gln Glu Lys Val Val Ala Gln Gln Ile Arg Gln Leu Phe Pro
        275   280   285

Lys Phe Ala Asp Thr Pro Ile Tyr Asn Asp Glu Ala Asp Pro Leu Val

```
            290                    295                    300

Gly Trp Ser Leu Pro Gln Pro Trp Arg Ala Asp Val Thr Tyr Ala Ala
305                 310                 315                 320

Met Val Val Lys Val Ile Ala Gln His Gln Asn Leu Leu Leu Ala Asn
                325                 330                 335

Thr Thr Ser Ala Phe Pro Tyr Ala Leu Leu Ser Asn Asp Asn Ala Phe
                340                 345                 350

Leu Ser Tyr His Pro His Pro Phe Ala Gln Arg Thr Leu Thr Ala Arg
            355                 360                 365

Phe Gln Val Asn Asn Thr Arg Pro Pro His Val Gln Leu Leu Arg Lys
    370                 375                 380

Pro Val Leu Thr Ala Met Gly Leu Leu Ala Leu Leu Asp Glu Glu Gln
385                 390                 395                 400

Leu Trp Ala Glu Val Ser Gln Ala Gly Thr Val Leu Asp Ser Asn His
                405                 410                 415

Thr Val Gly Val Leu Ala Ser Ala His Arg Pro Gln Gly Pro Ala Asp
                420                 425                 430

Ala Trp Arg Ala Ala Val Leu Ile Tyr Ala Ser Asp Asp Thr Arg Ala
        435                 440                 445

His Pro Asn Arg Ser Val Ala Val Thr Leu Arg Leu Arg Gly Val Pro
    450                 455                 460

Pro Gly Pro Gly Leu Val Tyr Val Thr Arg Tyr Leu Asp Asn Gly Leu
465                 470                 475                 480

Cys Ser Pro Asp Gly Glu Trp Arg Arg Leu Gly Arg Pro Val Phe Pro
                485                 490                 495

Thr Ala Glu Gln Phe Arg Arg Met Arg Ala Ala Glu Asp Pro Val Ala
            500                 505                 510

Ala Ala Pro Arg Pro Leu Pro Ala Gly Gly Arg Leu Thr Leu Arg Pro
        515                 520                 525

Ala Leu Arg Leu Pro Ser Leu Leu Leu Val His Val Cys Ala Arg Pro
    530                 535                 540

Glu Lys Pro Pro Gly Gln Val Thr Arg Leu Arg Ala Leu Pro Leu Thr
545                 550                 555                 560

Gln Gly Gln Leu Val Leu Val Trp Ser Asp Glu His Val Gly Ser Lys
                565                 570                 575

Cys Leu Trp Thr Tyr Glu Ile Gln Phe Ser Gln Asp Gly Lys Ala Tyr
            580                 585                 590

Thr Pro Val Ser Arg Lys Pro Ser Thr Phe Asn Leu Phe Val Phe Ser
            595                 600                 605

Pro Asp Thr Gly Ala Val Ser Gly Ser Tyr Arg Val Arg Ala Leu Asp
    610                 615                 620

Tyr Trp Ala Arg Pro Gly Pro Phe Ser Asp Pro Val Pro Tyr Leu Glu
625                 630                 635                 640

Val Pro Val Pro Arg Gly Pro Pro Ser Pro Gly Asn Pro
```

<210> 67
<211> 1290
<212> DNA
<213> Homo sapiens

<400> 67
atgcagctga ggaacccaga actacatctg ggctgcgcgc ttgcgcttcg cttcctggcc   60

ctcgtttcct gggacatccc tggggctaga gcactggaca atggattggc aaggacgcct   120

accatgggct ggctgcactg ggagcgcttc atgtgcaacc ttgactgcca ggaagagcca   180

gattcctgca tcagtgagaa gctcttcatg gagatggcag agctcatggt ctcagaaggc   240

tggaaggatg caggttatga gtacctctgc attgatgact gttggatggc tccccaaaga   300

gattcagaag cagacttca ggcagaccct cagcgctttc ctcatgggat tcgccagcta   360

gctaattatg ttcacagcaa aggactgaag ctagggattt atgcagatgt tggaaataaa   420

acctgcgcag gcttccctgg gagttttgga tactacgaca ttgatgccca gacctttgct   480

gactggggag tagatctgct aaaatttgat ggttgttact gtgacagttt ggaaaatttg   540

gcagatggtt ataagcacat gtccttggcc ctgaatagga ctggcagaag cattgtgtac   600

tcctgtgagt ggcctcttta tatgtggccc tttcaaaagc ccaattatac agaaatccga   660

cagtactgca atcactggcg aaattttgct gacattgatg attcctggaa aagtataaag   720

agtatcttgg actggacatc ttttaaccag agagaattg ttgatgttgc tggaccaggg   780

ggttggaatg acccagatat gttagtgatt ggcaactttg cctcagctg gaatcagcaa   840

gtaactcaga tggccctctg ggctatcatg gctgctcctt tattcatgtc taatgacctc   900

cgacacatca gccctcaagc caaagctctc cttcaggata aggacgtaat tgccatcaat   960

caggacccct tgggcaagca agggtaccag cttagacagg gagacaactt tgaagtgtgg   1020

gaacgacctc tctcaggctt agcctgggct gtagctatga taaaccggca ggagattggt   1080

ggacctcgct cttataccat cgcagttgct tccctgggta aggagtggc ctgtaatcct   1140

gcctgcttca tcacacagct cctccctgtg aaaaggaagc tagggttcta tgaatggact   1200

tcaaggttaa gaagtcacat aaatcccaca ggcactgttt tgcttcagct agaaaataca   1260

atgcagatgt cattaaaaga cttactttaa   1290

<210> 68
<211> 429
<212> PRT
<213> Homo sapiens

<400> 68
Met Gln Leu Arg Asn Pro Glu Leu His Leu Gly Cys Ala Leu Ala Leu
1   5   10   15

Arg Phe Leu Ala Leu Val Ser Trp Asp Ile Pro Gly Ala Arg Ala Leu
            20   25   30

Asp Asn Gly Leu Ala Arg Thr Pro Thr Met Gly Trp Leu His Trp Glu
        35   40   45

```
Arg Phe Met Cys Asn Leu Asp Cys Gln Glu Glu Pro Asp Ser Cys Ile
    50                  55              60

Ser Glu Lys Leu Phe Met Glu Met Ala Glu Leu Met Val Ser Glu Gly
65              70              75                      80

Trp Lys Asp Ala Gly Tyr Glu Tyr Leu Cys Ile Asp Asp Cys Trp Met
                85              90              95

Ala Pro Gln Arg Asp Ser Glu Gly Arg Leu Gln Ala Asp Pro Gln Arg
            100             105             110

Phe Pro His Gly Ile Arg Gln Leu Ala Asn Tyr Val His Ser Lys Gly
        115             120                 125

Leu Lys Leu Gly Ile Tyr Ala Asp Val Gly Asn Lys Thr Cys Ala Gly
    130             135             140

Phe Pro Gly Ser Phe Gly Tyr Tyr Asp Ile Asp Ala Gln Thr Phe Ala
145             150             155                 160

Asp Trp Gly Val Asp Leu Leu Lys Phe Asp Gly Cys Tyr Cys Asp Ser
                165             170             175

Leu Glu Asn Leu Ala Asp Gly Tyr Lys His Met Ser Leu Ala Leu Asn
            180             185             190

Arg Thr Gly Arg Ser Ile Val Tyr Ser Cys Glu Trp Pro Leu Tyr Met
        195             200             205

Trp Pro Phe Gln Lys Pro Asn Tyr Thr Glu Ile Arg Gln Tyr Cys Asn
    210             215             220

His Trp Arg Asn Phe Ala Asp Ile Asp Asp Ser Trp Lys Ser Ile Lys
225             230             235             240

Ser Ile Leu Asp Trp Thr Ser Phe Asn Gln Glu Arg Ile Val Asp Val
            245             250             255

Ala Gly Pro Gly Gly Trp Asn Asp Pro Asp Met Leu Val Ile Gly Asn
        260             265             270

Phe Gly Leu Ser Trp Asn Gln Gln Val Thr Gln Met Ala Leu Trp Ala
    275             280             285

Ile Met Ala Ala Pro Leu Phe Met Ser Asn Asp Leu Arg His Ile Ser
290             295             300

Pro Gln Ala Lys Ala Leu Leu Gln Asp Lys Asp Val Ile Ala Ile Asn
305             310             315             320

Gln Asp Pro Leu Gly Lys Gln Gly Tyr Gln Leu Arg Gln Gly Asp Asn
            325             330             335

Phe Glu Val Trp Glu Arg Pro Leu Ser Gly Leu Ala Trp Ala Val Ala
            340             345             350

Met Ile Asn Arg Gln Glu Ile Gly Gly Pro Arg Ser Tyr Thr Ile Ala
        355             360             365

Val Ala Ser Leu Gly Lys Gly Val Ala Cys Asn Pro Ala Cys Phe Ile
    370             375             380

Thr Gln Leu Leu Pro Val Lys Arg Lys Leu Gly Phe Tyr Glu Trp Thr
385             390             395             400
```

Ser Arg Leu Arg Ser His Ile Asn Pro Thr Gly Thr Val Leu Leu Gln
                405   410   415

Leu Glu Asn Thr Met Gln Met Ser Leu Lys Asp Leu Leu
            420   425

<210> 69
<211> 351
<212> DNA
<213> Homo sapiens

<400> 69
atggattact acagaaaata tgcagctatc tttctggtca cattgtcggt gtttctgcat   60

gttctccatt ccgctcctga tgtgcaggat tgcccagaat gcacgctaca ggaaaaccca   120

ttcttctccc agccgggtgc cccaatactt cagtgcatgg gctgctgctt ctctagagca   180

tatcccactc cactaaggtc caagaagacg atgttggtcc aaaagaacgt cacctcagag   240

tccacttgct gtgtagctaa atcatataac agggtcacag taatggggggg tttcaaagtg   300

gagaaccaca cggcgtgcca ctgcagtact tgttattatc acaaatctta a   351

<210> 70
<211> 116
<212> PRT
<213> Homo sapiens

<400> 70
Met Asp Tyr Tyr Arg Lys Tyr Ala Ala Ile Phe Leu Val Thr Leu Ser
1   5   10   15

Val Phe Leu His Val Leu His Ser Ala Pro Asp Val Gln Asp Cys Pro
            20   25   30

Glu Cys Thr Leu Gln Glu Asn Pro Phe Phe Ser Gln Pro Gly Ala Pro
            35   40   45

Ile Leu Gln Cys Met Gly Cys Cys Phe Ser Arg Ala Tyr Pro Thr Pro
        50   55   60

Leu Arg Ser Lys Lys Thr Met Leu Val Gln Lys Asn Val Thr Ser Glu
65   70   75   80

Ser Thr Cys Cys Val Ala Lys Ser Tyr Asn Arg Val Thr Val Met Gly
            85   90   95

Gly Phe Lys Val Glu Asn His Thr Ala Cys His Cys Ser Thr Cys Tyr
            100   105   110

Tyr His Lys Ser
            115

<210> 71
<211> 498
<212> DNA
<213> Homo sapiens

<400> 71
atggagatgt ccagggggct gctgctgttg ctgctgctga gcatgggcgg gacatgggca   60

tccaaggagc cgcttcggcc acggtgccgc cccatcaatg ccaccctggc tgtggagaag   120

gagggctgcc ccgtgtgcat caccgtcaac accaccatct gtgccggcta ctgccccacc   180

```
atgacccgcg tgctgcaggg ggtcctgccg gccctgcctc aggtggtgtg caactaccgc    240

gatgtgcgct tcgagtccat ccggctccct ggctgcccgc gcggcgtgaa ccccgtggtc    300

tcctacgccg tggctctcag ctgtcaatgt gcactctgcc gccgcagcac cactgactgc    360

gggggtccca aggaccaccc cttgacctgt gatgacccccc gcttccagga ctcctcttcc    420

tcaaaggccc ctccccccag ccttccaagc ccatcccgac tcccgggggcc ctcggacacc    480

ccgatcctcc cacaataa                                                   498
```

<210> 72
<211> 165
<212> PRT
<213> Homo sapiens

<400> 72
```
Met Glu Met Phe Gln Gly Leu Leu Leu Leu Leu Leu Ser Met Gly
1               5                   10                  15

Gly Thr Trp Ala Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile
        20              25                  30

Asn Ala Thr Leu Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr
        35              40                  45

Val Asn Thr Thr Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val
        50              55                  60

Leu Gln Gly Val Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg
65                  70                  75                  80

Asp Val Arg Phe Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val
            85                  90                  95

Asn Pro Val Val Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu
            100                 105                 110

Cys Arg Arg Ser Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu
        115                 120                 125

Thr Cys Asp Asp Pro Arg Phe Gln Asp Ser Ser Ser Ser Lys Ala Pro
    130                 135                 140

Pro Pro Ser Leu Pro Ser Pro Ser Arg Leu Pro Gly Pro Ser Asp Thr
145                 150                 155                 160

Pro Ile Leu Pro Gln
                165
```

<210> 73
<211> 165
<212> PRT
<213> Homo sapiens

<400> 73
```
Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu
1               5                   10                  15

Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His
            20                  25                  30

Cys Ser Leu Asn Glu Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe
        35                  40                  45
```

```
Tyr Ala Trp Lys Arg Met Glu Val Gly Gln Gln Ala Val Glu Val Trp
    50              55              60
```

```
Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu
65              70              75              80
```

```
Leu Val Asn Ser Ser Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp
                85              90              95
```

```
Lys Ala Val Ser Gly Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu
                100             105             110
```

```
Gly Ala Gln Lys Glu Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala
            115             120             125
```

```
Pro Leu Arg Thr Ile Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val
    130             135             140
```

```
Tyr Ser Asn Phe Leu Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala
145             150             155             160
```

```
Cys Arg Thr Gly Asp
                165
```

```
<210>   74
<211>   588
<212>   DNA
<213>   Homo sapiens
```

```
<400>   74
atggccctcc tgttccctct actggcagcc ctagtgatga ccagctatag ccctgttgga      60

tctctgggct gtgatctgcc tcagaaccat ggcctactta gcaggaacac cttggtgctt     120

ctgcaccaaa tgaggagaat ctcccctttc ttgtgtctca aggacagaag agacttcagg     180

ttcccccagg agatggtaaa agggagccag ttgcagaagg cccatgtcat gtctgtcctc     240

catgagatgc tgcagcagat cttcagcctc ttccacacag agcgctcctc tgctgcctgg     300

aacatgaccc tcctagacca actccacact ggacttcatc agcaactgca cacctggag     360

acctgcttgc tgcaggtagt gggagaagga gaatctgctg gggcaattag cagccctgca     420

ctgaccttga ggaggtactt ccagggaatc cgtgtctacc tgaaagagaa gaaatacagc     480

gactgtgcct gggaagttgt cagaatggaa atcatgaaat ccttgttctt atcaacaaac     540

atgcaagaaa gactgagaag taaagataga gacctgggct catcttga                   588
```

```
<210>   75
<211>   195
<212>   PRT
<213>   Homo sapiens
```

```
<400>   75
Met Ala Leu Leu Phe Pro Leu Leu Ala Ala Leu Val Met Thr Ser Tyr
1               5               10              15
```

```
Ser Pro Val Gly Ser Leu Gly Cys Asp Leu Pro Gln Asn His Gly Leu
            20              25              30
```

```
Leu Ser Arg Asn Thr Leu Val Leu Leu His Gln Met Arg Arg Ile Ser
        35              40              45
```

```
Pro Phe Leu Cys Leu Lys Asp Arg Arg Asp Phe Arg Phe Pro Gln Glu
    50                  55              60

Met Val Lys Gly Ser Gln Leu Gln Lys Ala His Val Met Ser Val Leu
65                  70              75                      80

His Glu Met Leu Gln Gln Ile Phe Ser Leu Phe His Thr Glu Arg Ser
                85              90                  95

Ser Ala Ala Trp Asn Met Thr Leu Leu Asp Gln Leu His Thr Gly Leu
            100             105             110

His Gln Gln Leu Gln His Leu Glu Thr Cys Leu Leu Gln Val Val Gly
        115             120             125

Glu Gly Glu Ser Ala Gly Ala Ile Ser Ser Pro Ala Leu Thr Leu Arg
    130             135             140

Arg Tyr Phe Gln Gly Ile Arg Val Tyr Leu Lys Glu Lys Lys Tyr Ser
145             150             155             160

Asp Cys Ala Trp Glu Val Val Arg Met Glu Ile Met Lys Ser Leu Phe
            165             170             175

Leu Ser Thr Asn Met Gln Glu Arg Leu Arg Ser Lys Asp Arg Asp Leu
            180             185             190

Gly Ser Ser
        195
```

1

1